2010
ANKENY
COMPREHENSIVE PLAN

The Comprehensive Development Plan for Ankeny, Iowa

Prepared with the CITY OF ANKENY By

RDG Planning & Design in association with Nilles Associates

ACKNOWLEDGEMENTS

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INTRODUCTION

Immediately after completion of the 2004 comprehensive plan, Ankeny experienced a growth spurt that exceeded the plan's short term projections. In terms of new residential construction starts, Ankeny experienced the highest growth year of all metro Des Moines communities in 2005. At the same time, the South Delaware corridor has developed into a regional retail center. The community is now rebounding from the economic recession of 2008 and 2009.

This growth verifies that Ankeny continues to be a strong, rapidly expanding community that combines a number of major assets – a desirable quality of life, important academic resources, a strong economy, and a prime location within the Des Moines metropolitan area. This comprehensive plan update builds on concepts and recommended strategic actions introduced in the 2004 plan to preserve these attributes as Ankeny continues to grow.

A BRIEF HISTORY OF ANKENY

The City of Ankeny was originally formed when John Fletcher Ankeny bought 80 acres of land in 1874 and platted the town the following year. The land was part of a federal government program for improvements on the Des Moines River. John Ankeny built the town's first store, post office, and hotel/boarding house. Area farmers utilized the town as a gathering point in its early days. Transportation between Des Moines at this time was difficult; most of the land between Ankeny and Des Moines was swampy and few bridges existed to cross the Des Moines River. In 1880, a passenger rail service was established that took Ankeny residents to Des Moines for a 33-cent fare.

On February 28, 1903, Ankeny was incorporated as a town with a population of fewer than 500 people. The town limits were set at one square mile. Following incorporation, several town services were established such as telephone service, electricity, and fire protection. Downtown Ankeny flourished over the next several decades; Third Street was the stage for political events, parades, and Town Band concerts on Saturday nights. Three fires damaged the downtown area during the 1930's, but most businesses were rebuilt.

National war preparations came to influence Ankeny's fate when the federal government decided to build the Des Moines Ordnance Plant just south of the small town in July 1941. Displacing numerous farmsteads, the munitions plant took up 4,442 acres and employed up to 19,000 people at one time. In 1945, the plant was closed and 9,200 workers were laid off in a single month.

Amazingly, Ankeny was not phased by the tremendous loss of jobs that occurred with the closing of the Des Moines Ordnance Plant. During this era, Ankeny evolved as a growing suburb of Des Moines and, to a lesser degree, Ames, providing residential areas convenient to both major employment centers. The town's economy remained strong with increased business and improved infrastructure. In 1947, John Deere and Company purchased 528 acres of the former plant's land, and the Iowa State University Research Farm utilized an additional 1,412 acres.

In 1961, Ankeny became incorporated as a city with 2,964 residents, which was double the 1950 population. The same year, Faith Baptist Bible College began construction in northwest Ankeny. The Des Moines Area Community College chose land on the former Des Moines Ordnance Plant site and began construction during the 1960's. The community experienced improvements in its educational facilities into the 1970's with the opening of Ankeny Senior High School in 1978.

In recent years, Ankeny has undergone a further transition into a balanced city. The growth of major retailing, the expansion of employment and business enters along the Interstate 35 corridor, and the persistent trend of population growth have all established Ankeny as an increasingly complex community. The policies set forth by the Ankeny Plan Update strive to address this dynamic nature of development in the City.

THE ROLE OF COMPREHENSIVE PLANNING

This comprehensive development plan has two fundamental purposes. The first provides an essential legal basis for land use regulation, such as zoning and subdivision control. Secondly, a modern comprehensive plan presents a unified and compelling vision for a community, derived from the aspirations of its citizens; and establishes the specific actions necessary to fulfill that vision.

THE LEGAL ROLE

Communities prepare and adopt comprehensive plans for legal purposes. Iowa State Statutes enable cities to adopt zoning and subdivision ordinances to promote the "health, safety, morals, or general welfare of the community." Land use regulations such as zoning ordinances recognize that people in a community live cooperatively and have certain responsibilities to one another. These regulations establish rules that govern how land is developed within a municipality's jurisdiction.

However, a city may not adopt land use ordinances without first adopting a comprehensive development plan. This requirement derives from the premise that land use decisions should not be arbitrary, but should follow an accepted and reasonable concept of how the city should grow.

The Ankeny Plan provides the ongoing legal basis for the City's authority to regulate land use and development.

THE COMMUNITY BUILDING ROLE

A comprehensive development plan has an even more significant role in the growth of a community. The plan establishes a picture of Ankeny's future, based on the participation of residents in the planning of their community. This vision is particularly crucial at this time in the community's history, as problems like traffic congestion begin to affect Ankeny's traditionally small-city character. Beyond defining a vision, the Plan presents a unified action program that will implement the City's goals. The Plan is designed as a working document – a document that both defines the future and provides a working program for realizing the City's

great potential.

PLAN ORGANIZATION

The Ankeny Plan contains several components which will guide growth and development in the City over the next twenty years. Each of these components acknowledges the need to accommodate new development, while creating an attractive living environment for residents and retaining Ankeny's unique features.

In general, the Plan evaluates the existing conditions of the City and proposes actions to be taken over the next twenty years. Specific components of the Plan include:

1. Demographic Update

This chapter summarizes important demographic trends (historical and projected) that will have a major impact on Ankeny as it plans for its future.

2. Existing Land Use and Projected Growth

This chapter examines the land use characteristics and trends affecting the growth in Ankeny. The section considers existing land use characteristics and projects the amount of land needed to accommodate the City's projected 2035 population of 93,000.

3. Community Vision, Goals and Principles.

This chapter summarizes the key goals and policies from the 2008/2013/2022 Strategic Plan and the 2004 Ankeny Comprehensive Plan.

4. Environmental and Stormwater Considerations.

This chapter highlights the need to protect and enhance the significant stream corridors called "bluebelts" in developing areas of Ankeny. The chapter recommends directing development to areas suitable for growth, maintaining natural features and ecological functions, and protecting water quality.

5. Future Land Use.

This chapter identifies areas for future growth in the City, taking into account the surrounding land use and the existing demand. The chapter also establishes development policies that will guide the city's future land use decisions.

6. Parks and Trails.

Active use of outdoor recreational facilities is essential to maintaining Ankeny's quality of life. Residents enjoy access to good City and Regional parks. Continued provision of excellent City parks and the expansion of the trails system are important to the City's future.

7. Transportation.

Ankeny must continue to provide good circulation around and through the town, as well as accommodate regional traffic needs. This chapter examines Ankeny's existing transportation network and presents strategies for providing strong transportation system.

8. Infrastructure.

This chapter discusses how the City's water and sanitary sewer systems can be maintained to high standards and how they can be updated to accommodate projected growth.

9. Public Facilities.

Ankeny's infrastructure systems are the framework for the City's basic operation and future growth. This chapter inventories existing public facilities and highlights the need for new facilities, or renovation and/or expansion of existing sites, to serve new and changing public service demands.

10. A Diverse and Balanced Economy.

This chapter presents an overview of the economic development program for Ankeny with a focus on the influence of the physical development of the community. The goals in this area are built upon smart planning principles to utilize the community's resources to develop a diverse and sustainable economy within the City. There is also consideration given to Ankeny's role as a major contributor to the metropolitan Des Moines economy.

11. Implementation.

Ankeny should implement the visions and actions presented by the plan through a realistic program that is in step with the resources of the community. This chapter addresses the scheduling of plan implementation by both public agencies and private decision-makers.

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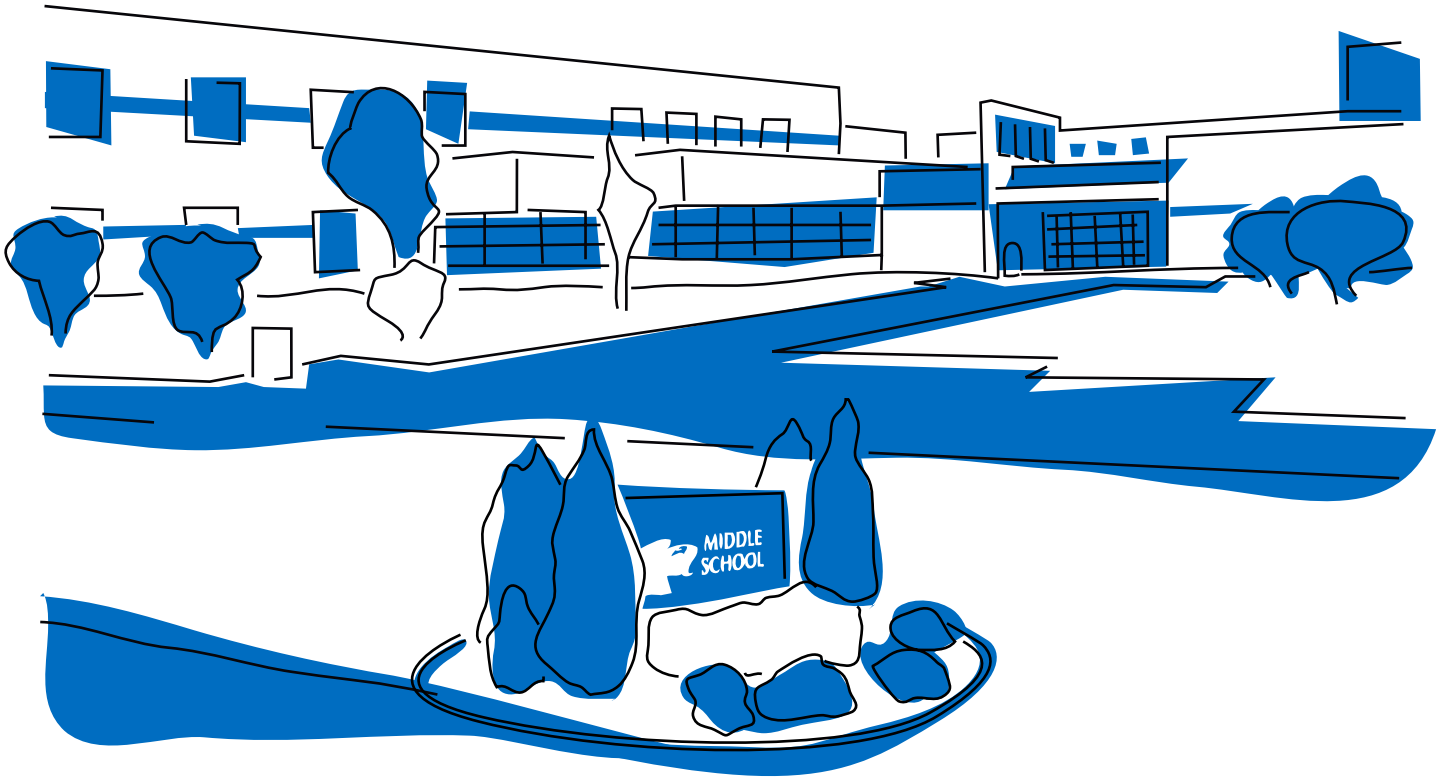
DEMOGRAPHIC UPDATE

This section summarizes important demographic trends (historical and projected) that will have a major impact on Ankeny as it plans for its future.



A SNAPSHOT OF ANKENY

This analysis examines the community's population and demographic dynamics, including examination of the City's future population composition. These trends provide a foundation for subsequent components of the Plan.

POPULATION TRENDS

Ankeny has continued to grow over the past several decades at a relatively high rate as compared to other metro communities. In 1990, the total population of Ankeny was 18,482.

In 2000, the total population was 27,117. To obtain an accurate mid-census population figure for the community, the city conducted a special census in 2005. Ankeny had a total population of 36,161 in 2005.

The population increase from 2000 to 2005 was about 9,000. This figure is larger than the population predicted for year 2005 by the 2002 Ankeny Comprehensive Plan (33,161).

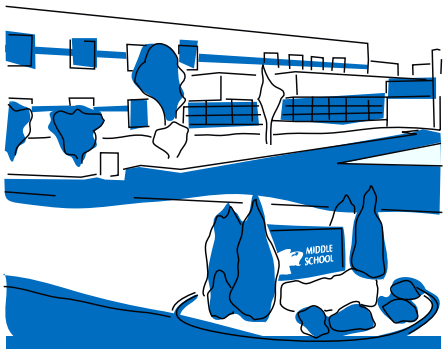
Using the 2005 updated census figures, the projections need to be revised in order to take into account the significant growth that occurred between 2000 and 2005.

Table 1.1 details the historical population trend in Ankeny. The table depicts a significant increase in population between 1950 and 1970, with continued steady growth to the present.

Table 1.1 **Population Trends in Ankeny**

Year	Population	% Change
1910	445	
1920	648	45.6%
1930	632	-2.5%
1940	779	23.3%
1950	1,229	57.8%
1960	2,964	141.2%
1970	9,151	208.7%
1980	15,410	68.4%
1990	18,482	19.9%
2000	27,117	46.7%
2005*	36,161	33.4%
2008**	42,287	17.0%

Source: U.S. Census Bureau, *Special Census



TRENDS AND KEY ISSUES

- Ankeny's population growth from 2000-2005 was much higher than that projected by the 2002 Ankeny Comprehensive Plan.
- Analysis of Ankeny's census figures indicates a very balanced population distribution by age category.
- Projections need to be revised based on Ankeny's special census figures.
- An annual growth rate of 3.6% (from Des Moines MPO Long Range Transportation plan for Ankeny Growth Study Area) estimates a population of 93,505 in year 2035. However, this estimate is projected from the 2000 population.
- An annual growth rate of 3.6% applied to the 2005 census population projects a 2035 population of 109,246 which is deemed very high.
- An annual growth rate of 3% when applied to the 2007 census estimate, projects a 2035 population of 93,000.
- This relates to the average annual construction of 757 dwelling units between 1999 and 2008.

POPULATION CHANGE 2000-2005

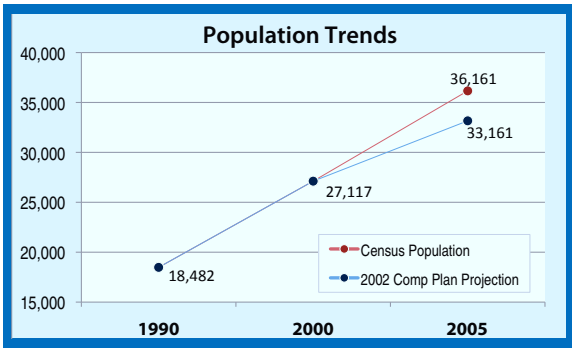
Since the 2000 Census, Ankeny's population has experienced very high growth. According to the 2005 Ankeny Special Census, Ankeny has a total population of 36,161, an increase of 33.4% from the 2000 Decennial Census figure of 27,117. This represents an annual growth rate of 5.93%.

Table 1.2 presents Ankeny's age composition as a percent of total population between 2000 and 2005. Figure 1.1 displays the 2000 to 2005 cohort change in graphic form. The largest percentage change occurred in young retirees (the 55-59 age cohort), showing a 64.4% increase from 2000. The cohorts that experienced the greatest numerical increase in population between 2000 and 2005 were children (Under 5, 5-9), young adults (25-29, 30-34) and young senior adults (55-59). These figures represent a very balanced population distribution. Ankeny is obviously a very attractive community for families, with a very strong young family component. At the same time, very strong growth in the young senior component reflects the community's attractiveness to retirees.

Table 1.2 Age Composition as Percent of Total Population, 2000-2005

Age Group	2000	2005	Change 2000-2005	% of Total 2000	% of Total 2005	Percent Change 2000-2005	Average Annual Percent Change 2000-2005	2000-2005 Growth Rate
Under 5	2,274	3,243	969	8.4%	9.0%	42.6%	8.52%	7.4%
5-9	2,045	2,865	820	7.5%	7.9%	40.1%	8.02%	7.0%
10-14	1,877	2,428	551	6.9%	6.7%	29.4%	5.87%	5.3%
15-19	2,046	2,373	327	7.5%	6.6%	16.0%	3.20%	3.0%
20-24	2,215	2,794	579	8.2%	7.7%	26.1%	5.23%	4.8%
25-29	2,185	3,128	943	8.1%	8.7%	43.2%	8.63%	7.4%
30-34	2,396	3,388	992	8.8%	9.4%	41.4%	8.28%	7.2%
35-39	2,363	3,052	689	8.7%	8.4%	29.2%	5.83%	5.3%
40-44	2,109	2,706	597	7.8%	7.5%	28.3%	5.66%	5.1%
45-49	1,908	2,377	469	7.0%	6.6%	24.6%	4.92%	4.5%
50-54	1,625	2,025	400	6.0%	5.6%	24.6%	4.92%	4.5%
55-59	1093	1797	704	4.0%	5.0%	64.4%	12.88%	10.5%
60-64	821	1182	361	3.0%	3.3%	44.0%	8.79%	7.6%
65-69	639	894	255	2.4%	2.5%	39.9%	7.98%	6.9%
70-74	510	702	192	1.9%	1.9%	37.6%	7.53%	6.6%
75-79	372	464	92	1.4%	1.3%	24.7%	4.95%	4.5%
80-84	323	395	72	1.2%	1.1%	22.3%	4.46%	4.3%
85+	316	348	32	1.2%	1.0%	10.1%	2.03%	1.95%
Total	**27,117**	**36,161**	**9,044**	100.0%	100.0%	33.4%	6.67%	5.93%

Source: US Census 2000 and 2005 Ankeny Special Census
Note: The Ankeny Special Census contained a mixture of 5 year and 10 year cohorts. For comparison purposes, the 10 year cohorts were changed to 5 year cohorts using the cohort's percentages from 2000.



TRENDS AND KEY ISSUES

- This plan recommends adopting a 2035 population forecast of 92,850 (say 93,000), which reflects the 1999-2008 Average Annual Residential Units Permitted Approach.

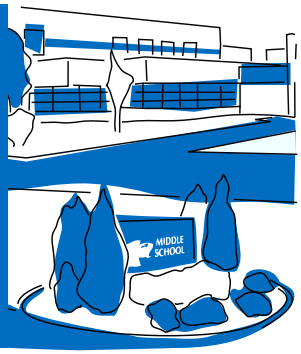


Figure 1.1: Age Cohort (1990-2005)

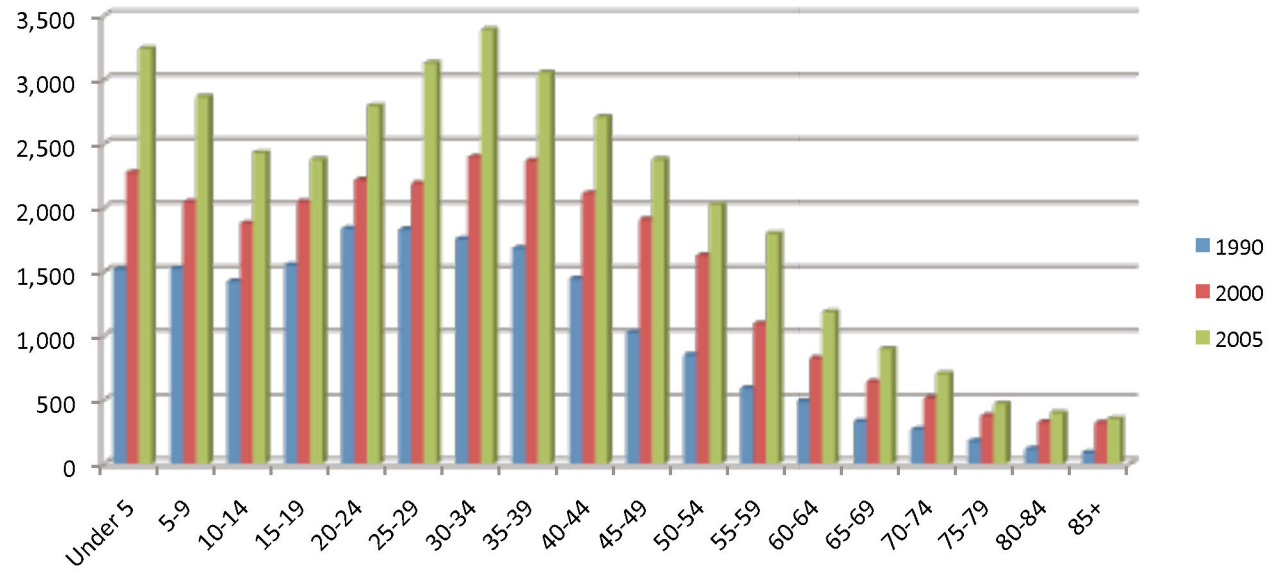


Table 1.3 Age Composition as Percetage of Total for Ankeny, Des Moines MSA and State of Iowa, 2000

Area	Total Population	Median Age	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 59	60 to 64	65 to 74	75 to 84	85 +
Ankeny	27,117	31.9	8.4%	7.5%	6.9%	7.6%	8.2%	16.9%	16.5%	13.0%	4.0%	3.0%	4.2%	2.6%	1.2%
Des Moines MSA	456,022	34.6	7.5%	7.4%	7.0%	6.9%	6.6%	15.4%	16.5%	13.6%	4.6%	3.5%	5.8%	3.9%	1.5%
State of Iowa	2,926,324	36.6	6.4%	6.9%	7.2%	7.7%	7.0%	12.4%	15.2%	13.4%	4.8%	4.0%	7.2%	5.4%	2.2%
Ankeny*	36,161	31.6	8.9%	7.9%	6.7%	6.5%	7.7%	18.0%	15.9%	12.2%	4.9%	3.3%	4.4%	2.4%	0.9%

Source: State Data Center of Iowa, *2005 Special Census

Figure 1.2: Age Composition as Percentage of Total (2000-2005)

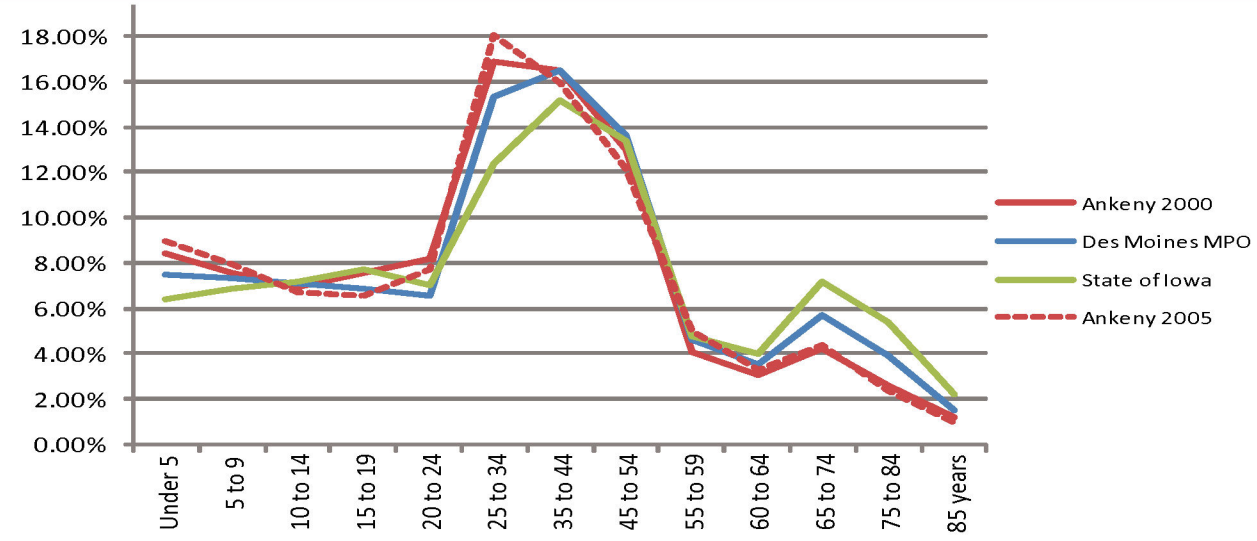


Table 1.3 compares the age composition in Ankeny with that of the Des Moines Metropolitan area and State of Iowa. Figure 1.2 displays the age distribution in a chart.

Median age is an index that summarizes the age distribution of a population in a community. The median age for Ankeny was 31.9 in 2000 which was lower than that for Des Moines MSA (34.6) and State of Iowa (36.6). The median age for Ankeny in 2005 special census (31.6) was lower than that in 2000.

While the highest peak of age group distribution for Ankeny was the 25 to 34 group, Des Moines Metropolitan had their largest percentage of population in the age group 35 to 44. The State of Iowa and the Des Moines metropolitan both had their major percentage of population in this age group (35 to 44) in 2000.

Des Moines MPO had higher percentage of young children under 5 years than the State of Iowa, however, it was lower than that of Ankeny in 2000. Ankeny had higher number of young children in 2000 and 2005. This shows that Ankeny had relatively large percentage of young families (between ages 25-34) with large percentage of young children (under 5 years) than Des Moines MSA and the State of Iowa in 2000. The dashed line on the figure displays the distribution in 2005 (special census). The trend is continued in 2005 with much higher percentage of young families with young children. This shows that Ankeny has become a desirable community to young families with children.

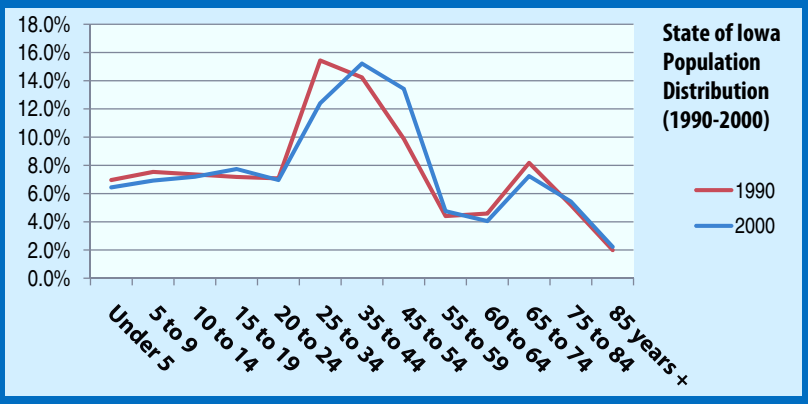
When compared with the State of Iowa and Des Moines MPO, Ankeny contains smaller percentages of senior citizens (age group 65 to 74, 75 to 84 and 85 years and above). This trend was also seen in 2005 in Ankeny. The State of Iowa shows much higher proportions of older people than the Des Moines MPO and Ankeny. This shows Ankeny as a relatively young community with fewer senior citizens.

Ankeny's total population can be grouped into "life stage categories". This categorization method provides information for better policy recommendations regarding age-specific services, such as recreation. Table 1.4 presents this grouping. The life stage categories are: children (under 19), young adults (20-34), mid-age adults (35-59), and retirees (60 and older).

Observations from these life stage category figures include:

- Mid age adults had the largest absolute population in 2000 (9,098) and 2005 (11,957), with retirees having the smallest population during the same period (2,981 and 3,985).
- Mid age adults, young adults and children all had substantial gains in absolute population with increases of 2,859, 2,514 and 2,667 respectively.
- All groups showed large percentage increases since 2000. Young adults had the greatest percentage change in population during the period.
- Each group contained a similar proportion of the total population in both 2000 and 2005

The life stage category grouping of the population again reflects a very balanced population distribution in Ankeny.



IOWA POPULATION TRENDS

- "Baby boom" peak clearly aged from 30 to 40 years old during the 1990-2000 period.
- This peak will age to 50 in 2010 and 60 in 2020. 2020 will experience peak of baby boomers entering retirement in Iowa.
- Steep decline of 55 to 64 year olds due in part to young retirees leaving state. This cohort did not change significantly.
- Remaining seniors 65 and older a significant group. Peakage of this group did not change, reflecting uniform death rate impact.
- Children under 5 years declined from 7% to 6.5%.

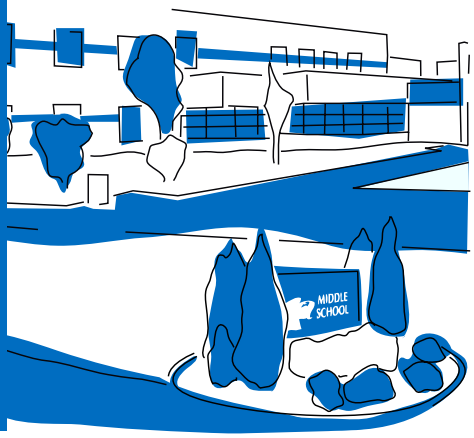
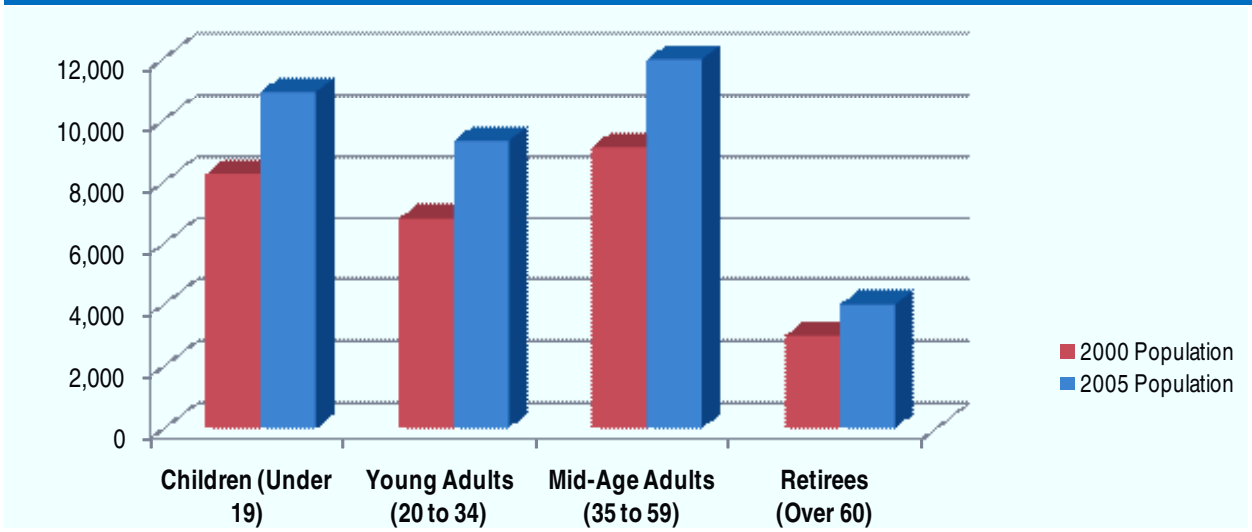


Table 1.4 Age Composition as by Life Stage Categories

	2000 Population (Actual)	2005 Population (Actual)	Change 2000-2005	% Change	% of Total 2000	% of Total 2005
Life Stage Groups						
Children (Under 19)	8,242	10,909	2,667	32.4%	30%	30%
Young Adults (20 to 34)	6,796	9,310	2,514	37.0%	25%	26%
Mid-Age Adults (35 to 59)	9,098	11,957	2,859	31.4%	34%	33%
Retirees (Over 60)	2,981	3,985	1,004	33.7%	11%	11%
Total	**27,117**	**36,161**	**9,044**	**33.4%**	**100%**	**100%**

Source: US Census 2000, 2005 Ankeny Special Census

Figure 1.3: Age Composition by Life Stage Categories



POPULATION PROJECTIONS

The Ankeny population increased from 27,117 in 2000 to a total of 36,161 in 2005. This figure is greater than the population predicted for year 2005 by the 2004 Ankeny Comprehensive Plan (33,161). The population projections need to be revised in order to take into account the significant growth that occurred between 2000 and 2005.

To gain a better understanding of the city's population change since the 2000 census, construction activity within the community for the last decade was analyzed. Using the 2005 Special Census and building permit records from 1999-2009, population projections can be developed incorporating the actual growth experienced in Ankeny between 2000 and 2005.

The 2004 Ankeny Comprehensive Plan projected a total of 55,000 residents by 2020, which represents an average annual increase of 1,394 residents per year. This correlates to an average increase of 550 dwelling units annually. However, a look at the 1999-2009 residential building permits reflects a significantly higher growth rate.

Table 1.5 Residential New Construction shows that Ankeny experienced the highest growth rate in the region in 1999-2009 with an average annual construction of 727 residential units. The number of residential building permits issued increased from 456 in 2000 to a high of 1,347 in 2005, and then decreased from 2005 to 2008. Residential development appears to be rebounding somewhat in 2009 from the 2008/2009 recession.

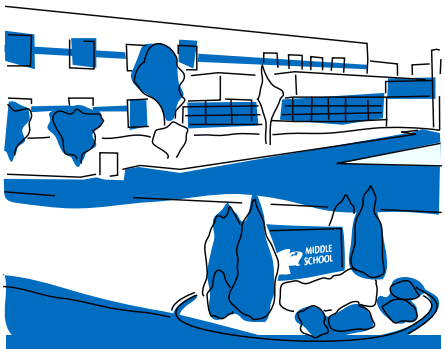
The Des Moines MPO 2030 Long Range Transportation Plan projects Ankeny's 2030 population as 87,738. However, the MPO's projection numbers are based on designated Growth Study Areas, not city limits and planned annexations. The Ankeny Growth Study area not only includes the City's corporate limits, but also the surrounding areas, some of which are already developed with residences and may not ever annex to Ankeny. Therefore, the base population for 2000 is at 32,778 for the Ankeny Growth Study area rather than the actual Ankeny census figure of 27,117.

Table 1.6 presents the MPO's population projection for the Ankeny Growth Study

Table 1.5 Residential New Construction (2000-2009)

	SF Detached	SF Attached	Duplex	Multi-Family	Total
1999	329	101	2	62	494
2000	278	86	18	74	456
2001	390	90	14	107	601
2002	492	128	30	88	738
2003	667	293	16	66	1042
2004	604	297	0	197	1098
2005	677	529	0	141	1347
2006	471	229	0	144	844
2007	402	117	0	60	579
2008	256	36	0	80	372
2009	371	14	0	36	421
Total	**4,937**	**1,920**	**80**	**1,055**	**7,992**
Percent of Total	**62%**	**24%**	**1%**	**13%**	**100%**

Note: Multi family includes apartments and stacked condo units



TRENDS AND KEY ISSUES

- Ankeny has been very successful in attracting young families with children, even in a state/region where these cohorts are declining.
- Can this strategy continue to succeed, in light of an aging population base? Should it be supplemented with strategies to attract/retain other cohorts?
- Response: There will be a continuing need for quality communities attractive to young families with children. However, Ankeny recognizes the need to accommodate all age groups.
- The state/region will see increasing numbers of retiring seniors through 2020, when the peak of the baby-boomers hit 60 years of age. How can Ankeny become more attractive to this age group?
- Response: A balanced housing stock, providing quality apartment and condo/townhome alternatives to single-family homes, as well as public services oriented to all age groups, will continue to attract empty-nesters and seniors.

Figure 1.4: Ankeny Residential Building Permits (1999-2009)

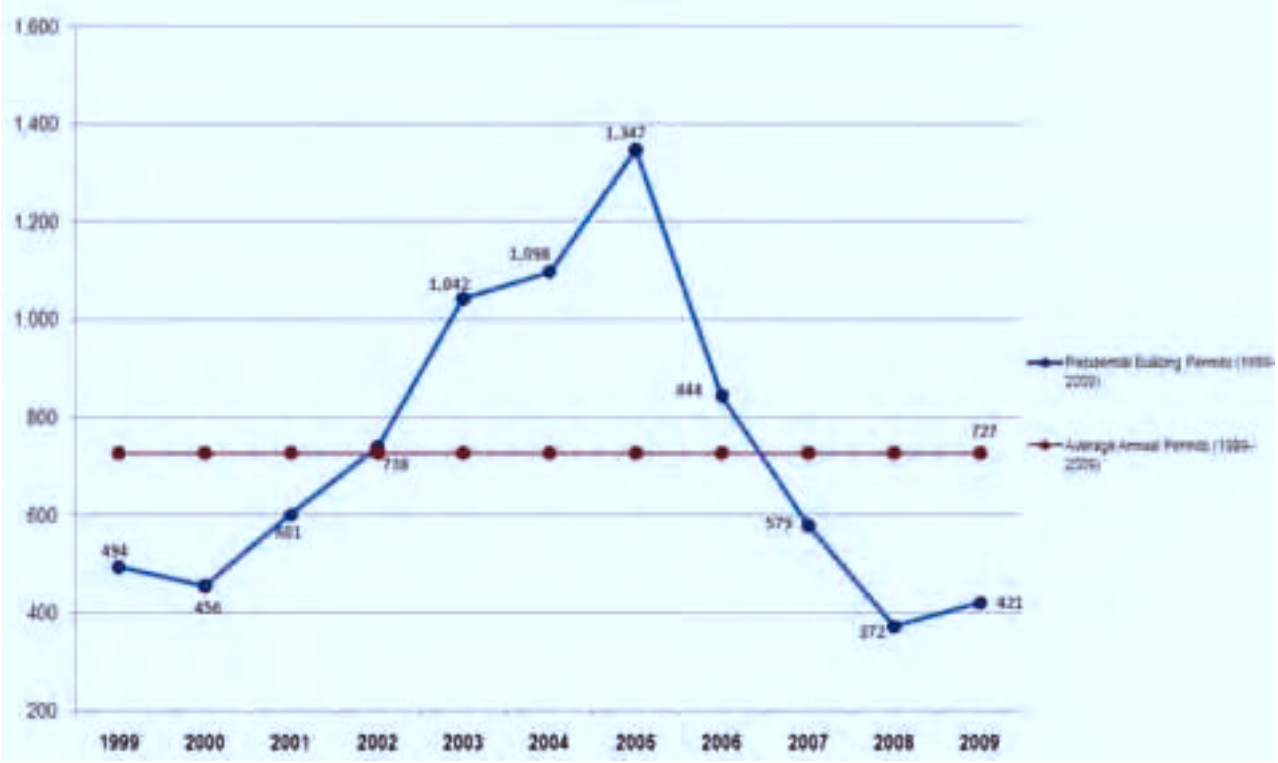


Figure 1.5: MPO Growth Study Area for Ankeny (2030 Long Range Transportation Plan)

Table 1.6 Des Moines MPO Ankeny Growth Study Area Projection

Data Type	2000	2005	2010	2020	2030	Total Growth
Total Population	32,778	39,164	50,276	66,720	87,738	**54,960**
Total Employment	14,025	17,018	22,311	28,862	37,535	**23,510**
Retail Employment	4,186	5,115	5,479	6,164	6,581	**2,395**
Number of Households	12,375	15,487	20,026	27,120	35,927	**23,552**
School Enrollment	5,118	6,513	7,240	-	-	**2,122**

area. Figure 1.5 depicts the 2030 MPO Growth study area boundary for Ankeny as shown in the 2030 MPO Long Range Transportation Plan (LRTP). The map also shows the 2035 updated planning boundary for the Des Moines MPO.

PROJECTING POPULATION GROWTH

Using the special census and the building permit records, projections can be developed incorporating actual growth experienced in Ankeny between 2000 and 2005. The projections presented in Table 1.7 are intended to provide a variety of growth scenarios, allow for comparative analysis, and facilitate selection of a projection scenario most likely to occur. The following numbered projection scenarios correlate to the detailed projections presented in Table 1.7 and Figure 1.6.

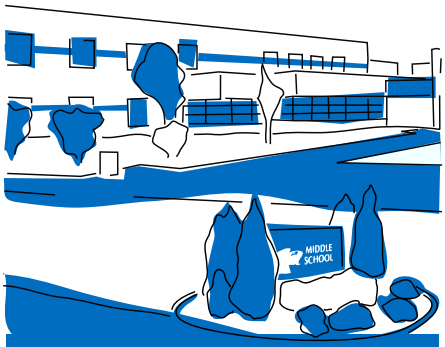
1. **The 2004 Comprehensive Plan** included a cohort survival projection incorporating a 32% in-migration factor. The extension of that 2004 projection to the year 2035 results in a population of 82,000. However, this scenario does not incorporate the actual 2005 census Ankeny population of 36,161 and is therefore unacceptable.

2. **The Average Annual Growth Rate** for the Ankeny Growth Study area is proposed as 3.6% in the Des Moines MPO's LRTP. This average annual growth rate, when applied to Ankeny's 2000 Census population of 27,117, results in a 2035 population of 93,505.

However, we know that the average annual growth rate between 2000 and 2005 was much higher than 3.6%. This increase should be factored into alternative projections. The 3.6% average annual growth rate also results in 2010 population of 38,662. This number is below the 2007 census estimate of 40,582 for Ankeny. So, a suitable projection rate that correlates to the average annual residential construction for the last 10 years should be determined.

3. When we apply **the 3.6% average** annual growth rate to the 2005 base population of 36,161, the resulting projected 2035 population would be 109,246, which is deemed high for Ankeny.

4. **A 3% growth rate** will result in a population of 92,849 (93,000) for year 2035 when applied to 2007 census estimate of 40,582. This rate of growth also corresponds to 750 dwelling units annu-



TRENDS AND KEY ISSUES

- The completion of the Baby-boomers through their life cycle by 2035 will result in a "flattening" of the age cohort distribution. What are the implications of this flattening on Ankeny.
- Response: Focusing on quality neighborhoods, active lifestyles, housing choices and public services for all age cohorts will keep Ankeny in a good position to accommodate population changes.

ally through the planning period.

5. **A 4% average annual growth** projection uses Ankeny's average annual rate of population growth between 1990 and 2000 (3.9% rounded up). This growth rate when applied to 2005 census population of 36,161 results in a 2035 population estimate of 117,284, an average annual increase of 2,704 people through the planning period.

Between 2000 and 2005, Ankeny experienced an average annual growth rate of 6% (5.93% rounded up). Ankeny will not likely see that rate of growth through any extended time period. However, for general information, that consistent rate of growth would result in a 2035 population of 207,690, an average annual increase of 5,717 people through the planning period. As this scenario is not realistic, it is not included in Table 1.7 or Figure 1.6.

6. **The 2004 Comprehensive Plan** estimated that Ankeny will have a population of 55,000 in 2020, which represented an average annual increase of 1,394 residents per year and an average annual construction of 550 dwelling units. This scenario applied to 2005 census numbers results in a 2035 population estimate of 79,061.

7. Although the growth experienced between 2000 and 2005 is unlikely to continue for next 30 years, it is important for comparative purposes to discuss such scenario. The **average annual number of units permitted between 2000 and 2005** was 882 units per year. This average annual construction rate when applied to the 2005 census numbers, results in a 2035 population estimate of 104,957, an average annual increase of 2,294 people through the planning period.

8. The last scenario uses the **average annual residential units permitted between 1999 and 2008** to project future residential growth into 2035. Analyzing the construction activity over a 10-year period allows for fluctuations experienced in the housing market to be equalized. The average number of units permitted between 1999 and 2008 is calculated as 757 units per year. This number applied to the 2005 census number, results in a 2035 population estimate of 95,207.

Though different alternative scenarios are presented here, a single projection that is the most reasonable and most likely to

Table 1.7 **Population Projection**

Projection Scenarios	2000	2005	2010	2015	2020	2025	2030	2035
1. 32% Migration Rate	27,117	32,440	53,319	45,507	53,319	62,005	71,564	82,000
2. 3.6% Des Moines MPO Annual Population Growth (Base Population is 2000)	27,117	32,362	38,622	46,093	55,009	65,650	78,349	93,505
3. 3.6% Des Moines MPO Annual Growth (Base Population is 2007 Census Estimate)	27,117	36,161*	45,125	53,853	64,270	76,702	91,539	109,246
4. 3% Annual Population Growth (Base Population is 2007 Census Estimate)	27,117	36,161*	44,345	51,408	59,596	69,088	80,092	92,849
5. 4% Annual Population Growth (Base Population is 2005 Special Census)	27,117	36,161	43,995	53,527	65,124	79,233	96,399	117,284
6. Construction Activity: 550 DU/ year (2004 Comp Plan)	27,117	36,161	43,311	50,461	57,611	64,761	71,911	79,061
7. Construction Activity: 882 DU/ year (2000-2005 Average Annual Bldg Permits)	27,117	36,161	47,627	59,093	70,559	82,025	93,491	104,957
8. Construction Activity: 757 DU/ year (1999-2008 Average Annual Bldg Permits)	27,117	36,161	46,002	55,843	65,684	75,525	85,366	95,207

*special census, ** census estimate

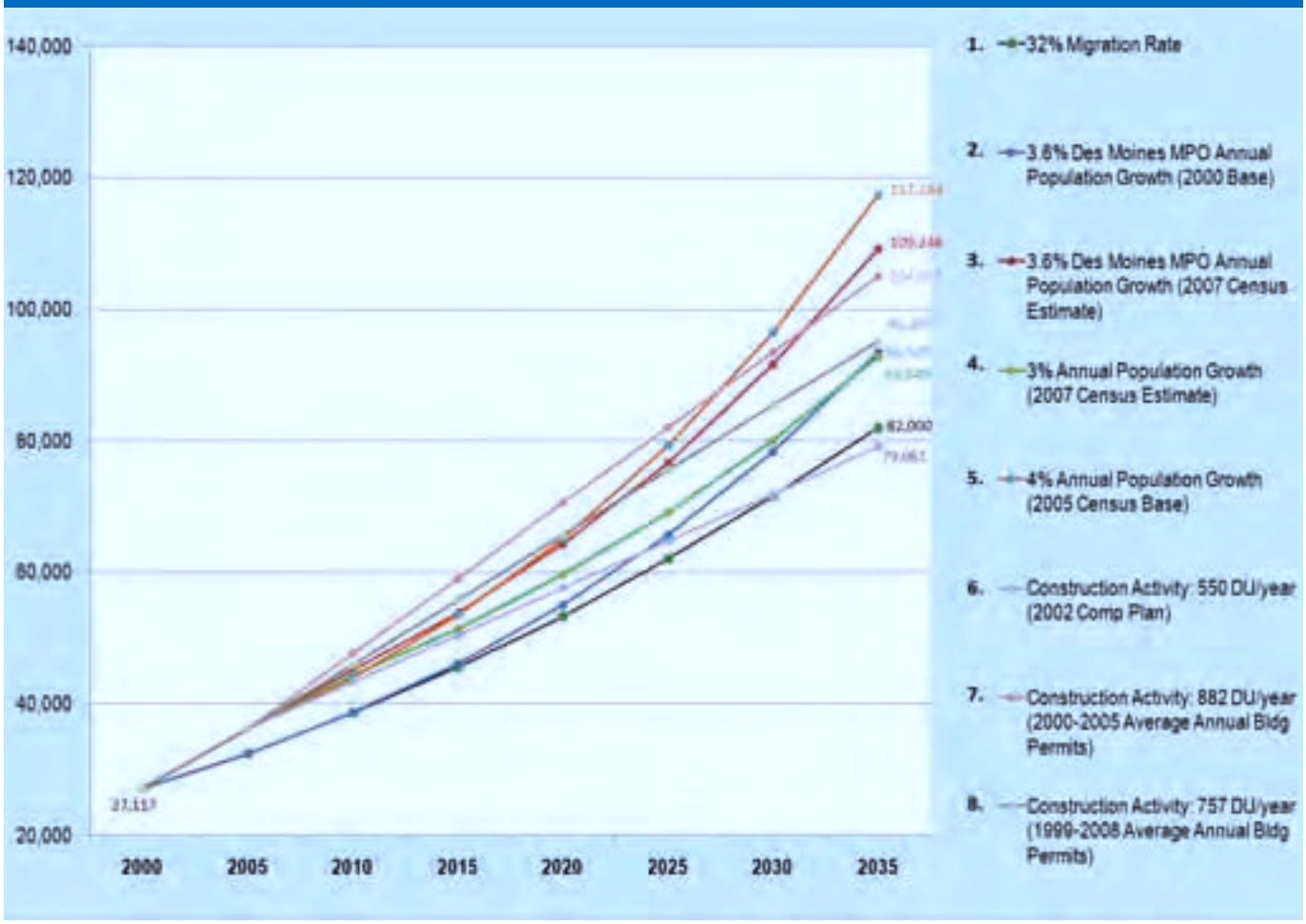
occur given the current situation must be chosen for projecting future growth.

This plan recommends using an average annual growth rate of 3%, Scenario 4., that projects a 2035 population of 92,849 (93,000 rounded up).

The average annual growth rate of 3% relates to an average annual construction of 750 dwelling units which is almost equal to the average annual construction from 1999 to 2008.

Thus, a 3% average annual growth rate is suitable for Ankeny as it strongly reflects the population trends and residential construction activity in the last 10 years.

Figure 1.6: **Alternative Population Projection Scenarios for Ankeny**



CONCLUSION

As seen on Figure 1.6, Ankeny's growth over the next 25+ years could vary from 79,000 to 117,000. The amount of growth will have significant implications on City services, utilities, transportation, and parks. For purposes of this comprehensive plan update, a projected 3% annual growth rate resulting in a 2035 population of 93,000 seems appropriate. This projection should be evaluated with the 2010 census and updated in 5-10 years.

2

EXISTING LAND USE AND PROJECTED GROWTH

This section examines the land use characteristics and trends affecting the growth in Ankeny. The section considers existing land use characteristics and projects the amount of land needed to accommodate the City's projected 2035 population of 93,000.

EXISTING LAND USE CHARACTERISTICS

This chapter identifies areas for future growth in the City, taking into account the surrounding land use and the existing demand .

EXISTING LAND USE

The City of Ankeny (incorporated area) covers about 29 square miles. Existing land uses in the 2009 City limits were inventoried by parcel, based on the land use categories in Table 2.1.

Table 2.1 indicates the distribution of land uses in Ankeny in 2009. Figure 2.1 illustrates this distribution. Table 2.2 and 2.3 provide a comparison of land use for Ankeny between 2002 and the recent 2009 survey.

While there were some differences in the way information was gathered and tabulated, it is possible to draw some general conclusions about changes in the city's land use pattern and distribution over the past seven years. The character of development can be summarized into four major categories:

Residential Uses

As shown in Table 2.1, residential uses constitute Ankeny's largest land use category, accounting for about 38% of the City's developed area, or 4,378 acres. Single Family residential development accounts for about 80% of residential land. A variety of other housing types such as duplex/bi-attached, townhomes, apartments and condominiums exists in Ankeny and make up the remaining 20% of residential land. Such developments are concentrated along the Interstate 35 and Delaware Ave in the eastern edge of the City as well as in the northwest and southwest sections of the City.

Over the past 7-8 years, Ankeny has seen the most growth in residential land uses with Table 2.3 showing a 1900 acre gain in residential. Table 2.2 shows that residential land also grew at the fastest rate between 2002 and 2009. Between 2002 and 2009 the city converted approximately 272 acres of land annually to residential, mostly in typical urban sized lots.

Though the residential land use has increased significantly during this period, other land uses have remained fairly consistent, with the exception of industrial, which decreased from 12.2% of total developed land area to 8.5%. In fact, industrial land use increased during the period – just not as fast as the other categories.

Commercial Uses

About 5.6% of Ankeny's developed land area is in commercial uses. With a total of 650 acres, the commercial category includes uses such as office, restaurant, and entertainment, retail, services, auto-oriented business and commercial recreation. Major commercial corridors and nodes in the City include:

- Uptown
- North and South Ankeny Boulevard between NW 36th Street and SE 54th Street
- Delaware Avenue between NE 5th Street and SE 3rd Street
- Delaware Avenue between SE Magazine Road and south of SE Oralabor Road
- Interstate 35 and SE Oralabor Road Junction
- Commercial corridor along First Street between Interstate 35 and Trilein Drive

The city has added 220 acres of commercial development since the 2002 land use survey with an annual increase of 31 acres. Although the percentage of urbanized land in the City devoted to commercial uses is small, the number of acres has increased dramatically in the past 15 years.

Industrial Uses

Industrial uses (excluding transportation infrastructure and utilities) constitute a significant amount of total land development in Ankeny. This reflects the large John Deere facility in the southwest potion of the City as well as the industrial parks on the east and southeast sides.

Industrial land covers about 976 acres, or 8.5% of the total development area and includes uses such as warehousing, light industrial, heavy industrial and agriculture industrial. Contributing to this category are the following industrial areas:

- The Union Pacific Railroad corridor between Oralabor Road and Ordnance Road
- Ordnance Road and State Street, near the John Deere facility
- The Metro North and Metro North II industrial parks, just east of Interstate 35, along Creekview Drive near Oralabor Road
- Industrial area just east of Interstate

TRENDS AND KEY ISSUES

- Ankeny's population has increased by a substantial percent from 2000 to 2005. This rate of growth is expected to continue.
- The average annual residential building permits issued between 1999 to 2009 is about 727.
- If recent housing construction trends continue, Ankeny will reach a population of 93,000 by year 2035.

Table 2.1 **Ankeny Land Use Distribution, 2009**

Land Use Category	Acres	% of Developed Land	Acres per 100 People
Residential	**4,378.0**	**38.0%**	**10.79**
Single Family Residential	3539	30.7%	8.72
Duplex/Bi-attached	139	1.2%	0.34
Townhomes	287	2.5%	0.71
Condominium	124	1.1%	0.31
Apartment	156.5	1.4%	0.39
Mobile Homes	108	0.9%	0.27
Nursing Home	24	0.2%	0.06
Commercial	**650**	**5.6%**	**1.60**
Office	193	1.7%	0.48
Retail/Commercial	457	4.0%	1.13
Industrial	**976**	**8.5%**	**2.41**
Light Industrial	269	2.3%	0.66
Warehouse	135	1.2%	0.33
General Industrial	572	5.0%	1.41
Civic	**2,729**	**23.7%**	**6.72**
School	824	7.2%	2.03
Church/Religious/Public	790	6.9%	1.95
Parks and Recreation	687	6.0%	1.69
Open Space	58	0.5%	0.14
Golf Course	370	3.2%	0.91
Transportation/Streets/ROW	**2,530**	**22%**	**6.23**
Others (Utility/Govt. Land)	**249**	**2.2%**	**0.61**
Total Developed Land	**11,512**	**100%**	**28.37**
Agriculture and Open Space	**6,246**		
Ag Residential	947		
Agriculture	5,299		
Vacant Urban Land	**930**		
Total Area	**18,688**		

Source: Land use inventory by RDG Planning and Design 2009

a. Residential TownHomes; b. Residential Neighborhood; c. Single Family Residential; d. Residential Street

35, and south of 1st Street, along SE Creekview Drive

Industrial land increased by only 80 acres from 2002 to 2009 representing the smallest land use category increase. These figures do not include the Crosswinds Business Park Development which is still included in the Agriculture/Open Space category as it is undeveloped.

Civic/Parks and Recreation Uses

Civic uses account for a substantial 23.7% (including parks and recreation) of Ankeny's developed area. 2,729 acres of the City's land are devoted to these uses. Included in this category are uses such as schools, religious institutions, churches, public buildings, parks, recreation facilities, libraries, government offices etc. About 30% of the Civic use is occupied by existing and future school sites.

About 25% of the civic use is dedicated for Parks and Recreation facilities. Golf courses are also developed on the northeast and west development areas. Over the past 7-8 years, Ankeny has seen significant growth in park land uses. Between 2002 and 2009 the city added approximately 254 acres of park land.

At 1.7 acres per 100 people, Ankeny has significantly more parkland than many communities. The Ankeny Regional Airport on the southeast side is another significant component of the civic category. Major educational use areas include Des Moines Area Community College, Faith Baptist Bible College, and Ankeny High School.

The amount and quality of park and recreation facilities is an important factor in overall community quality and will be further analyzed in Parks and Recreation chapter.

About 5% (930 acres) of the total land inside the City limits is currently defined as "urban vacant". Urban vacant land is typically platted or planned, awaiting development, or is part of a larger parcel currently under development. This is distinguished from "Agriculture" land much of which represents future developable land.

Of this total vacant land inside the city limits, about 36% (338) acres is classified as residential, and about 59% (555 acres) is classified Business Commercial and Industrial.

Table 2.2 **Comparative Land Use in Ankeny, 2002 - 2009**

	Acres		% of Developed Area		Acres per 100 People	
	2002	**2009**	**2002**	**2009**	**2002**	**2009**
Residential	2,470.7	4,378.0	33.6%	38.0%	9.1	10.8
Commercial	429.9	650.0	5.8%	5.6%	1.6	1.6
Industrial	895.6	976.0	12.2%	8.5%	3.3	2.4
Civic	1,321.2	2,042.0	18.0%	17.7%	4.9	5.0
Parks/Recreation	435.2	687.0	5.9%	6.0%	1.6	1.7
Transportation	1695.2	2,530.0	23.0%	22.0%	6.3	6.2
Utilities	111.1	249.0	1.5%	2.2%	0.4	0.6
Total Developed Area	**7,358.8**	**11,512.0**	**100.0%**	**100.0%**	**27.1**	**28.4**

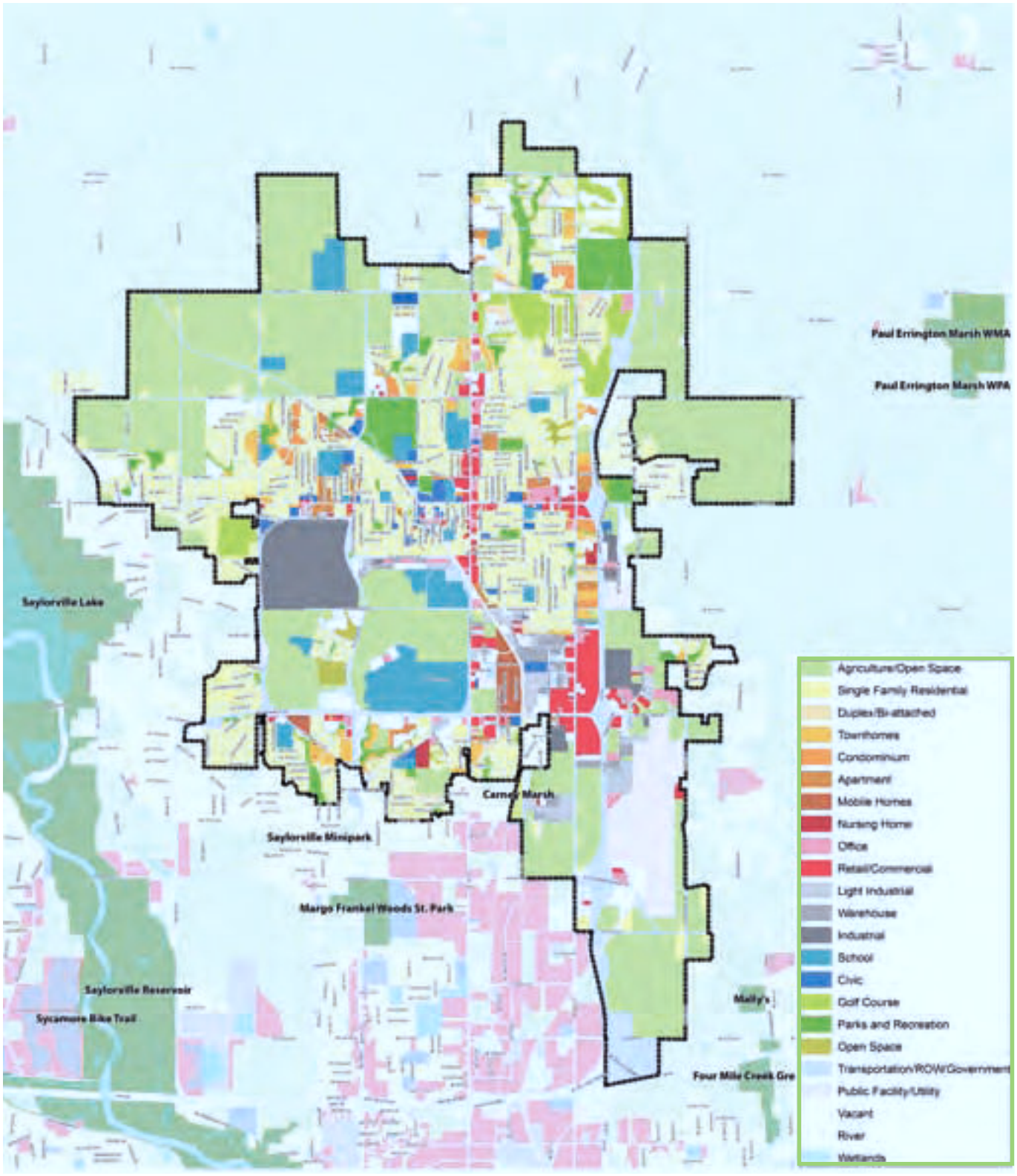
Source: Ankeny Comprehensive Plan 2004; RDG Planning and Design Land Use Inventory 2009

Table 2.3 **Urban Land Consumption for Principal Uses, 2002 - 2009 (acres)**

	2002	2009	Change	Annual Land Consumption
Residential	2,470.7	4,378.0	1907.3	272.5
Commercial	429.9	650.0	220.1	31.4
Industrial	895.6	976.0	80.4	11.5
Civic	1,321.2	2,042.0	720.8	103.0
Parks/Recreation	435.2	687.0	254.5	36.4
Transportation	1695.2	2,530.0	834.8	119.3
Utilities	111.1	249.0	137.9	19.7
Total Developed Area	**7,358.8**	**11,512.0**	**4,153.2**	**593.3**

Source: Ankeny Comprehensive Plan 2004; RDG Planning and Design Land Use Inventory 2009

Figure 2.1: **Existing Land Use in Ankeny, 2009**



Land Use Comparision with Other Communities

Table 2.4 compares the land use distribution in Ankeny with several other communities. All of these comparison communities, except Papillion, are "independent" Iowa communities not part of a metropolitan region. Papillion is a suburb in the Omaha metro area. As indicated by the table, Ankeny's land use distribution is not characteristic of a metro area "bedroom" suburb. Rather, it is very comparable to that of independent free-standing communities.

RECENT RESIDENTIAL CONSTRUCTION

Table 2.5 is a compilation of Ankeny's new residential construction activity for the past decade (1999 to 2009). Residential development includes dwelling units described as single family detached, single family attached and multi-family. Single family detached is all dwelling units on a single lot with no common walls. Single family attached includes all townhomes, duplexes, condominiums where there are two or more side by side housing units in the same building. Multi family includes all apartments & stacked condo units.

Figure 2.2 shows annual permit totals graphically while Figure 2.3 shows new housing mix by year. In the years 1999-2009 single family detached constituted 62% of Ankeny's growth, single family attached constituted 24%, duplex 1% and multi-family 13%. The table shows that there was an average of 449 single-family, 175 single-family attached, 7 duplex, and 96 multiple-family dwelling units constructed, for a total average of 727 dwelling units per year during that period.

It is anticipated that single-family detached units will remain the predominant housing form in Ankeny throughout the planning period. However, the housing trend between 1999 and 2009 also suggest the following:

- Higher-density housing forms that maintain single-family characteristics (single family attached and townhouse configurations) will continue to grow in popularity, accommodating an aging "baby-boomer" and "empty-nester" population and first time home buyers.
- Affordable housing development will generally take the form of townhouse and multi-family development.

Based on these trends and the existing distribution of housing types in Ankeny, the following allocation of housing is proposed to describe the City's housing market through 2035:

- 65% single family detached
- 20% single family attached (townhomes, duplexes)
- 15% multi-family (apartments & stacked condo units)

Table 2.4 Comparative Land Use Distribution

	Percent of Urbanized Land					
	Ankeny (2009)	Denison (2003)	Mason City (2005)	Ottumwa (2000)	Papillion, NE (2006)	Pella (2006)
Population (2008 Census Est.)	42,287	7,184	27,337	24,342	23,739	10,208
Residential	38.0%	25.2%	34.1%	43.6%	47.7%	31.3%
Commercial	5.6%	8.6%	8.5%	4.4%	5.2%	3.6%
Industrial	8.5%	6.9%	15.0%	5.6%	2.5%	8.5%
Civic	14.0%	16.2%	10.2%	9.1%	7.3%	26.6%
Parks/Recreation	9.7%	24.1%	6.7%	11.7%	17.5%	5.1%
Transportation	24.2%	19.0%	25.5%	25.0%	19.8%	25.0%
Total Developed Area	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Ankeny Comprehensive Plan 2004; RDG Planning and Design Land Use Inventory 2009

Table 2.5 Residential New Construction, 1999 - 2009

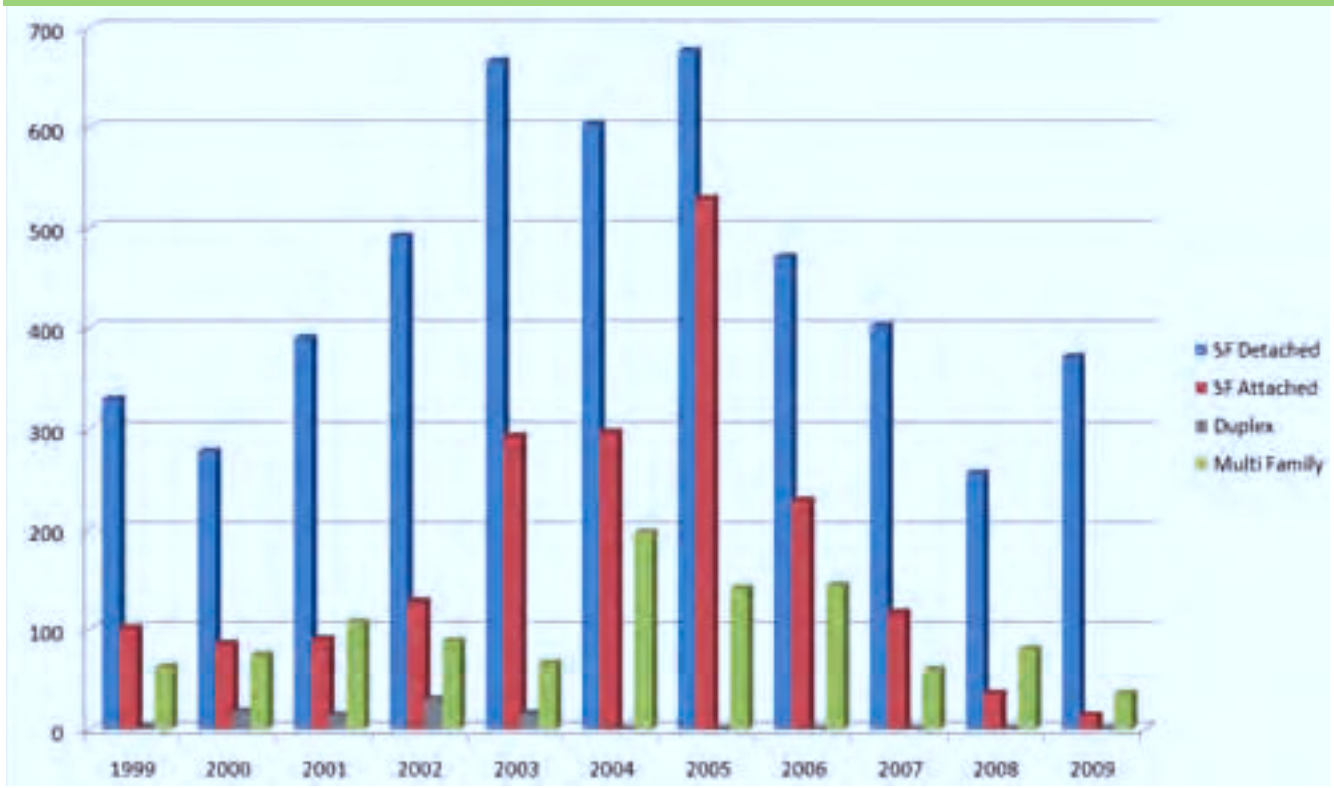
	SF Detached	SF Attached	Duplex	Multi-Family	Total
1999	329	101	2	62	494
2000	278	86	18	74	456
2001	390	90	14	107	601
2002	492	128	30	88	738
2003	667	293	16	66	1042
2004	604	297	0	197	1098
2005	677	529	0	141	1347
2006	471	229	0	144	844
2007	402	117	0	60	579
2008	256	36	0	80	372
2009	371	14	0	36	421
Total	**4,937**	**1,920**	**80**	**1,055**	**7,992**
Annual Average	**449**	**175**	**7**	**96**	**727**
Percent of Total	**62%**	**24%**	**1%**	**13%**	**100%**

Source: Ankeny Comprehensive Plan 2004; Note: Multi-family includes apartments and stacked condo units

a. Historical Single Family Residential Home; b. New Single Family Residential

Figure 2.2: **Ankeny Residential Building Permits (1999-2009)**

Figure 2.3: **Ankeny Residential Types (1999-2009)**



POPULATION AND GROWTH CONTEXT

The City of Ankeny should continue to attract its share of regional jobs and housing growth. A key element of that attraction is quality development, in a well-integrated land use, natural environment, civic improvements and transportation context. Understanding the amount of land needed to accommodate planned growth is crucial to developing realistic public facilities and infrastructure plans.

Current residents and people considering Ankeny as their future home have high expectations regarding amenities like parks, trails and open space. At the same time, mixed land uses, where a family can meet basic needs and accommodate their life-cycle housing needs without moving across town are becoming the norm in quality neighborhoods. All of these trends require the City to have a good understanding of future land needs.

Population and development projections guide forecasts of land consumption during the planning period. The following is an analysis of these factors.

RESIDENTIAL LAND NEED PROJECTIONS

Forecasts of future land needs in Ankeny are based on population and development projections for the planning period up to the year 2035. Land use projections presented here forecast a target year 2035 population of approximately 93,000 based on a 3.0% annual growth rate.

Table 2.6 presents the 27 year housing demand, assuming that Ankeny will have a population of 92,849 in 2035. This analysis is based on following assumptions:

- **Household population** at the end of the period excludes residents living in group care facilities, nursing homes and other institutional quarters. The non-household population does not produce a demand for conventional housing units. The forecast in Table 2.6 assumes that the proportion of the population not in households will remain the same.
- **Average people per household** is expected to remain constant over the next twenty years at 2.6 in Ankeny. If the city attracts younger families this could change in the coming years.
- **Household demand** at the end of the period is based on the household population and number of people per household.
- **The vacancy rate** of 8.05% in 2005 is assumed to remain at the same level. Every community needs some vacancy as it provides diversity and opportunities for new residents moving to a community and ensures that demand does not exceed supply, which can drive up housing costs.
- **Unit needs** at the end of each period are based on the number of occupied units plus the number of projected vacant units.
- **Replacement need** is the number of housing units demolished or converted to other uses. A number of homes, as they grow old deteriorate or no longer meet the demands of the housing market. The city should replace these homes at approximately 10 units per year.
- **Cumulative need** is based on the number of units needed at the end of each period, plus the number of replacement units; minus the number of units needed at the end of the previous period.

The projection indicates a cumulative demand for 23,826 housing units in Ankeny between 2009 and 2035. At about 880 units annually, this is slightly higher than the average annual construction between 1999 and 2009 but much lower than Ankeny's peak construction time in 2005. The City has clear goals of continuing a moderate rate of growth. Construction activity between 2007 and 2009 depicts a recent slowing trend in housing construction. However, this can be attributed to large number of existing inventory lots and the slowing economy. Once this situation has balanced out, an average annual construction of 750-800 units for

TRENDS AND KEY ISSUES

- A population of approximately 93,000 in 2035 will generate a need for an additional 23,826 dwelling units. The additional dwelling units should be composed of 65% single family detached, 20% single- family attached and 15% multi family, creating demand for approximately 6,254 acres or 9-10 sections of land. Doubling that amount means the city should plan for 18 to 20 sections.
- In order to meet the growing city's commercial demand, between 830 to 940 acres of commercial land should be designated for commercial use. To provide alternative sites, the plan should designate 1.5 times the "hard demand" for commercial land. This means about 1200 to 1400 acres should be planned for commercial use.
- Based on increasing population and residential use, Ankeny should absorb between 1200 to 1400 acres of new industrial land by 2035.

next 27 years would be moderate projection. The variety of housing choice in Ankeny also reflects the needs for residents at all stages of life. The city also aims to improve and continue this flexibility in housing types for residents.

Table 2.7 correlates the demand for housing to the amount of land needed to support new housing. Based on desirable occupancy standards, it is assumed that:

- 65% of the new units will be single-family detached
- 20% would be single-family attached (townhomes, duplexes)
- 15% would be multi-family (apartments, stacked condos)
- Three single-family detached units require an acre of land
- Six single-family attached units will require an acre
- Twelve multi-family units per one acre

It is projected that the city will need about 6,254 acres of residential land by 2035 to accommodate the projected population. Because about 330 acres of vacant land in the City are already zoned residential, about 6,000 acres of additional residential land will be needed to satisfy the residential need through year 2035. This need correlates to developing about 9-10

Table 2.6 Projected Housing Development Demand, 2008-2035

	2008	2010	2015	2020	2025	2030	2035	Total
Population at the End of Period	41,071	44,345	51,408	59,596	69,088	80,092	92,849	
Household Population at End of Period	40,759	44,008	51,017	59,143	68,563	79,483	92,142	
Average People/Household	2.60	2.60	2.60	2.60	2.60	2.60	2.60	
Household Demand at End of Period	15,677	16,926	19,622	22,747	26,370	30,570	35,439	
Projected Vacancy Rate	8.05%	8.05%	8.05%	8.05%	8.05%	8.05%	8.05%	
Unit Needs at End of Period	17,049	18,408	21,340	24,739	28,679	33,247	38,542	
Replacement Need		20	50	50	50	50	50	270
Cumulative Need		**3,442**	**2,982**	**3,449**	**3,990**	**4,618**	**5,345**	**23,826**
Average Annual Construction			**596**	**690**	**798**	**924**	**1,069**	**882**

Table 2.7 Required Residential Land, 2008-2035

	% of Demand	Units	Gross Density (du/A)	Land Needs	Designated Land (x2)
2008-2015					
Single Family Detached	65%	4,175	3	1391.8	2,784
Single Family Attached	20%	1,285	6	214.1	428
Multi-Family	15%	964	12	80.3	161
Total	**100%**	**6,424**		**1,686.2**	**3,372**
2015-2025					
Single Family Detached	65%	4,835	3	1,611.8	3,224
Single Family Attached	20%	1,488	6	248.0	496
Multi-Family	15%	1,116	12	93.0	186
Total	**100%**	**7,439**		**1,952.8**	**3,906**
2025-2035					
Single Family Detached	65%	6,476	3	2,158.7	4,317
Single Family Attached	20%	1,993	6	332.1	664
Multi-Family	15%	1,494	12	124.5	249
Total	**100%**	**9,963**		**2,615.3**	**5,231**
Total 2008-2035		**23,826**		**6,254.3**	**12,509**

sections (square miles) of land in Ankeny by 2035.

Using the rule of designating land at a rate of two hard times the "hard demand", it is suggested that 12,509 acres be reserved for residential development over the planning period. The existing land use map illustrates the location of existing residential land in the City. The development concept outlined later in this document identifies areas in which this potential development should occur.

COMMERCIAL LAND NEED PROJECTIONS

Demand for additional commercial services will change along with population increase. Commercial growth is also an important part of the city's overall economic development strategy. Although this plan does not include a comprehensive retail market analysis, it is important to provide adequate commercial space to meet future market needs. It is also important not to allocate too much land for commercial development, which could restrict growth of other land uses. This projection does not normally include regional commercial development.

Regional commercial development is not only related to changes in population of a community, but also to regional market dynamics. It is therefore difficult to estimate. In Ankeny's case, recent commercial development includes a significant amount of regional retail development. The methodologies below would therefore tend to overestimate commercial land development needs.

Two methods are used to project neighborhood and community-oriented commercial land needs:

A population service relationship. This method relates commercial growth to population projections. It assumes that the absolute amount of commercial land per 100 people will remain the same and that new commercial development will grow in proportion to population growth.

Residential use proportion. This assumes a consistent relationship between the amount of land used for residential and commercial purposes, thereby relating commercial growth directly to residential development rates.

Table 2.8 compares the result of these methods and suggests a demand for 830 to 940 acres of commercial land during next 27 years. To provide alternative sites, the land use plan should designate 1.5 times the "hard demand" for commercial land. Thus, for planning purposes the city should designate at least 1200 acres of land for future commercial development. Because about 555 acres of vacant land in the City are already zoned commercial/business uses, about 800 acres of additional commercial land will be needed to satisfy the commercial need through year 2035.

INDUSTRIAL LAND NEED PROJECTIONS

The amount of future industrial and business park expansion is dependent upon the City's desire to accommodate more industrial land uses, as well as market demand for available land in the Des Moines region. Direct access to major transportation corridors makes Ankeny an attractive location for large industrial facilities. It is also important to provide ample land for expansion of the existing industries and companies in Ankeny as they prosper and expand.

Unlike commercial demands, the need for industrial land is not directly related to population growth, making it much more difficult to predict. The employment base for Ankeny businesses stretches far beyond the City limits and is largely affected by trends in the metropolitan area. Also, a single major corporate decision can dramatically increase (or decrease) the projected industrial demand in a community. In addition, a decision by the City to pursue industrial development aggressively can affect industrial land needs.

Despite the market differences between commercial and industrial demand, the

a. Oralabor Road; b.N. Ankeny Blvd; c. Delaware Ave; d. Northview School

Table 2.8 Required Commercial Land, 2008-2035

	2008	2015	2025	2035	Conversion Need	Designated Land (x1.5)
Population Proportion Method						
Projected Population	41,071	51,408	69,088	92,849		
Commercial Use/100 Residents	1.60	1.60	1.6	1.6		
Projected Commercial Use (acres)	657.84	822.53	1,105.41	1,485.58	**827.74**	**1,241.61**
Residential Use Proportion Method						
Residentia Land (acres)	4,378.00	6,064.25	8,017.01	10,632.34		
Commercial/Residential Ratio	0.150260095	0.150260095	0.150260095	0.1502601		
Projected Commercial Use (acres)	657.84	911.21	1,204.64	1,597.62	**939.78**	**1,409.67**

Table 2.9 Required Industrial/Business Park Land, 2008-2035

	2008	2015	2025	2035	Conversion Need	Designated Land (x3)
Population Proportion Method						
Projected Population	41,071	51,408	69,088	92,849		
Industrial Use/100 Residents	2.41	2.41	1.6	1.6		
Projected Industrial Use (acres)	987.77	1,238.93	1,105.41	1,485.58	**1,249.88**	**3,749.64**
Residential Use Proportion Method						
Residentia Land (acres)	4,378.00	6,064.25	8,017.01	10,632.34		
Industrial/Residential Ratio	0.225621312	0.225621312	0.225621312	0.22562131		
Projected Industrial Use (acres)	987.77	1,368.22	1,808.81	2,398.88	**1,411.11**	**4,233.34**

projection methods used to predict future demand for industrial land are the same as commercial.

Table 2.9 displays projected industrial and business park land needs for Ankeny throughout 2035. Based on increasing population and residential use proportion methods described above, Ankeny should absorb between 1200 to 1400 acres of new industrial land. Because the City currently has about 500 acres zoned for commercial and business development, an additional 1000 acres would need to be allocated for this type of development.

In order to provide maximum flexibility, the land use plan should consider long term locations for up to three times the demand or 3,600 to 4,200 acres for industrial and business park uses. The Crosswinds Business Park, which encompasses approximately 800 acres of land, can be considered to be a part of this future industrial land demand.

a. Tones Spices

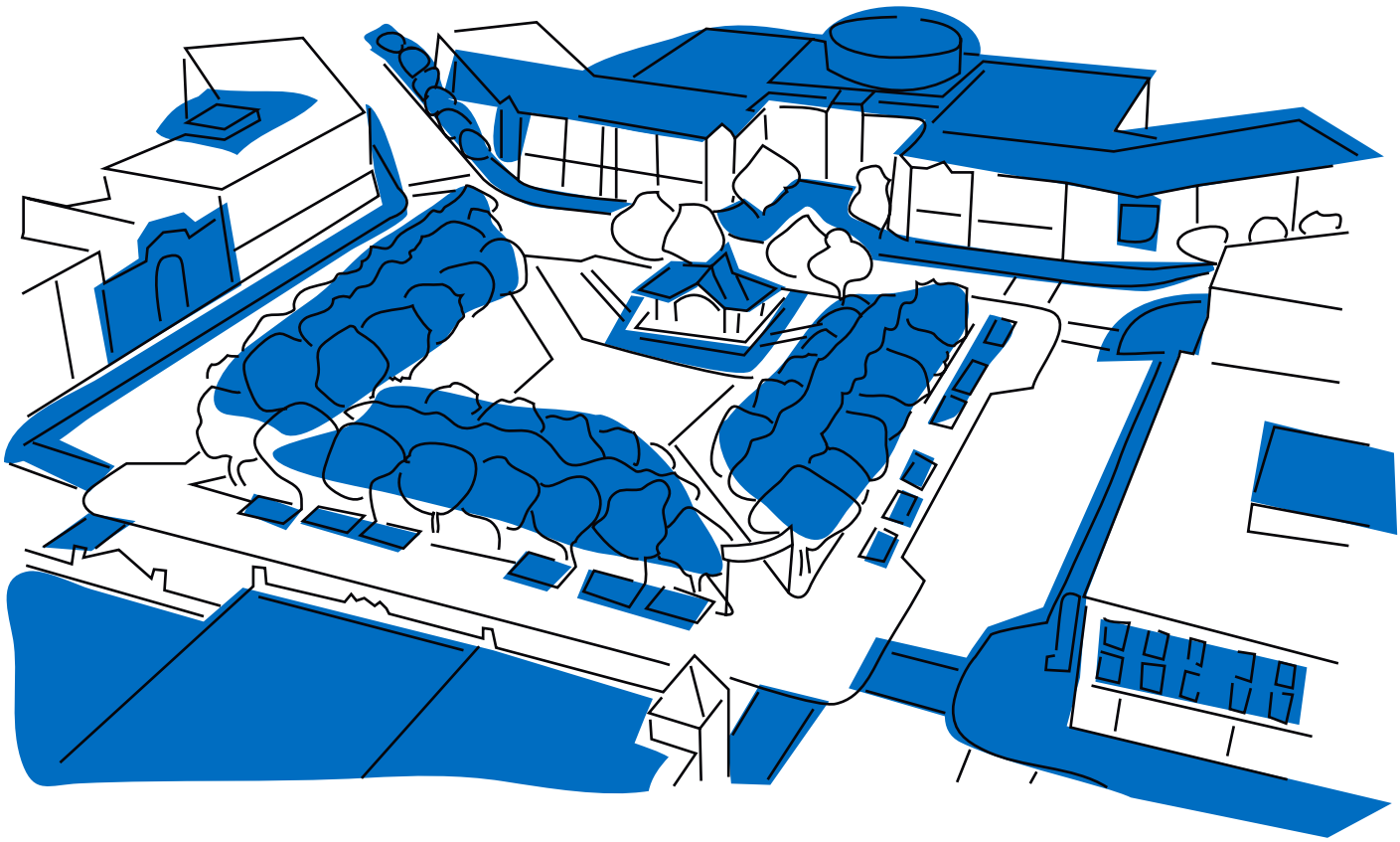
CONCLUSION

- The city will need about 6,000 acres (9-10 sections) of residential land by 2035 to accommodate the projected population. This is just the hard demand.
- About 800 acres of additional commercial land will be needed to satisfy the commercial need through year 2035. For flexibility, about 1,200 to 1,400 (1.5 times hard demand) acres should be designated.
- An additional 1200 acres would need to be allocated for industrial development. To provide flexibility about 3,500 to 4,000 (3 times the hard demand) acres should be provided.

3

COMMUNITY VISION, GOALS AND PRINCIPLES

This chapter summarizes the key goals and policies from the 2008/2013/2022 Strategic Plan and the 2004 Ankeny Comprehensive Plan.



STRATEGIC PLAN 2008/2013/2022

The City of Ankeny continually strives for citizen feedback on its policies and priorities. In addition to the standard required public notice on formal actions, the City maintains a public website where all Council and Board/Commission agendas are posted. Every two years the City of Ankeny conducts a citizen survey to assess public opinion about various City services and to obtain critical input on new City initiatives and proposals. The statistically valid survey, which is conducted by the independent National Research Center, reaches approximately 1,200 randomly selected Ankeny households. It polls citizens on information ranging from public safety, development, parks and recreation, economic development, infrastructure, administrative services and leadership.

Informed by this Citizen Survey, in 2007 and 2008 the City Council completed detailed strategic planning sessions, facilitated by Lyle Sumek Associates, Inc. Through this process, the Council crafted a "Vision 2022" for the City, as well as a 5-year strategic plan. The Strategic Plan is the City Council's road map to fulfill its Vision, which can be achieved by working together on common goals.

This Comprehensive Plan Update seeks to incorporate, not duplicate, these recent strategic planning initiatives. In addition, this Update cross-checks the strategic planning vision, goals and principles with those developed during the 2004 Comprehensive Plan process.

ANKENY 2022 VISION STATEMENT

The Ankeny 2022 Vision Statement, adopted as part of the 2008 Strategic Plan is:

- "Ankeny 2022 has a **small hometown feel** and **great community spirit**."
- "Ankeny residents enjoy a **safe community**, an **active lifestyle**, **easy movement** and **access to the area**."
- "Ankeny is an **environmentally sensitive** and **sustainable city** with a **vibrant town center** and is a **regional business center**."

The City's official slogan, developed to summarize this vision statement is:

"Ankeny – bringing it all together."

VISION 2022 GUIDING PRINCIPLES

The bold-type phrases in the above vision statement are deemed Vision 2022 Guiding Principles and are further detailed in the 2008 Strategic Plan with the "Means" statements listed below:

- **Principle A: Small Hometown Feel**

  Means

  - Livable neighborhood where neighbors know and help neighbors
  - Quality public schools and education programs
  - Residents being connected to and knowledgeable about the community
  - Strong community cultural arts organization and activities (e.g. band, choir, theater, etc.)
  - Support for local businesses by residents
  - Support for strong family values
  - Parents involved with their children in schools and community activities

- **Principle B: Community Spirit**

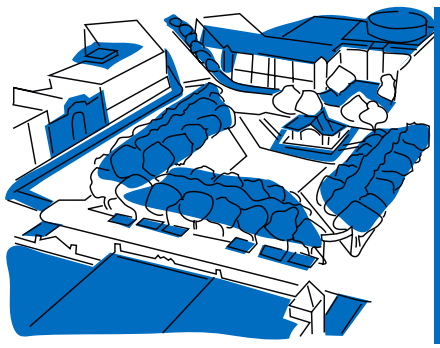
  Means

  - Residents volunteering and contributing to a better community.
  - Strong community and service organizations with active participation.
  - Community events and festivals bringing residents together.
  - Partnership with schools and other governments.
  - Well informed residents actively engaged in City governance.
  - Residents enthusiastic and excited about the Ankeny community.

- **Principle C: Safe Community**

  Means

  - People feeling safe and secure: any time of day, any place in the city
  - Low crime rate
  - Responsive healthcare and timely emergency medical response
  - Safety for pedestrians and bike riders
  - Fire and medical response (80% under 8 minutes)
  - Appropriate staffing and equipment for quality public safety services



ANKENY 2004 COMPREHENSIVE PLAN VISION STATEMENT

"We see Ankeny as a special place where residents desire to stay, where businesses prosper and, to which visitors and our children want to return. Through good planning, we will continue to ensure that growth occurs in a manner supportive of a family-friendly lifestyle, with housing, employment, shopping, recreation, and enrichment opportunities for all residents."

- Citizen sharing responsibility for community safety

- **Principle D: Active Lifestyle**

  Means

  - Recreational programs and activities for all family generations
  - Safe parks and neighborhoods for walking, jogging or biking
  - Multi-use trails connecting the community
  - Library providing information to the community
  - Athletic fields for sports participation by all ages
  - Community organized social events and festivals
  - Top quality municipal golf course with community facilities
  - Education for a lifetime, including DMACC and higher education

- **Principle E: Easy Movement and Access to the Area**

  Means

  - Well-maintained roads and traffic system
  - Multi-use trails connecting the City
  - Regular public mass transit within the City'
  - Complete street designs with bike lanes and without parking
  - Walkable neighborhoods with access to services, parks and schools
  - Functional interchanges on the Interstate Highway System 5 on I-35 and 1 on I-80

- **Principle F: Environmentally Sensitive and Sustainable City**

  Means

  - Clean surface water and flow control
  - Environmentally sensitive developments, facilities and infrastructure
  - Active recycling program
  - Green spaces through the City
  - Educated residents on landscape design and product use
  - Effective regional stormwater management
  - Alternative, cost-effective energy sources in neighborhoods and for homes

- **Principle G: Vibrant Town Center**

  Means

  - Gathering place for residents and visitors
  - Walkable and pedestrian-friendly
  - Seat of government: City Hall, Library, Police Station
  - Place for eating and entertainment
  - Connected by trails and transit to uptown and neighborhoods
  - Home of community events and festivals
  - Seamless integration with the community as a whole
  - Environmentally-sensitive open space and parks with a variety of venues

- **Principle G: Regional Business Center**

  Means

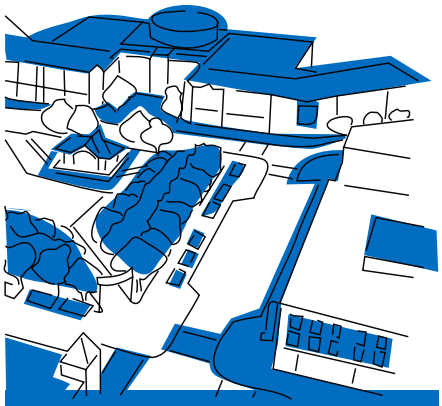
  - Increase City's tax base
  - Fully occupied business parks
  - State of the art technology infrastructure
  - Viable corporate and general aviation airport with support business
  - Attract

  A. Life science businesses and job opportunities

  B. Advanced manufacturing businesses and job opportunities

  C. Logistics and distribution businesses and job opportunities

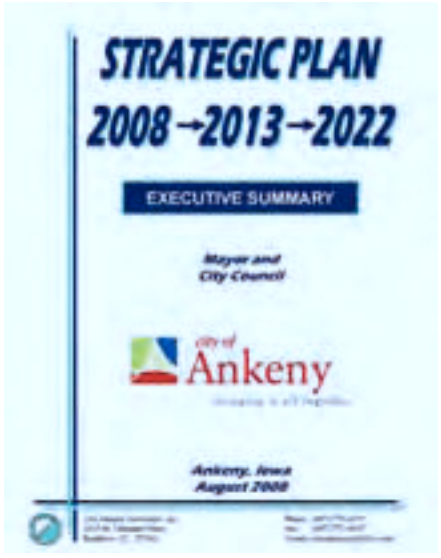
  - Friendly environment for home offices and businesses with support business



PRINCIPLES TO GROW BY

Key Goals and Principles from the 2008 Ankeny Strategic Plan and the 2004 Comprehensive Plan that most directly relate to the physcial growth and development of the community are summarized:

- Small Hometown Feel
- Safe Community
- Active Lifestyle
- Easy Movement and Access to the Area
- Environmentally Sesitive and Sustainable City
- Vibrant Town Center
- Regional Business Center
- Create Housing Opportunities and Choices



a. Ankeny Comprehensive Plan 2004; b. Ankeny Strategic Plan 2008/2013/2022

CITY OF ANKENY FIVE YEAR GOALS (2013)

Within this long-range vision framework, the City Council identified the following five major goals for the 2008-2012 period:

- Maintain a Financially Sound City Providing Valued Services
- Develop Ankeny as a Regional Business Center
- Develop Prairie Trail
- Manage Growth and Revitalization
- Improve Mobility and Infrastructure

The Strategic Plan went on to identify specific objectives, short-term challenges and opportunities, and 2008-09 actions and major projects. These details are incorporated into the Implementation chapter of this Comprehensive Plan Update.

CITY OF ANKENY MISSION STATEMENT

The Strategic Plan is sustained by the following mission statement, adopted by Council as a part of the 2008 Strategic Plan:

> **"To provide high quality municipal services, excellent customer service and sound fiscal management. We engage our community, producing a greater quality of life and are advocates for Ankeny, protecting the community's interests."**

This mission statement provides day-to-day guidance to all City officials in undertaking their duties in service to the citizens of Ankeny.

ANKENY COMPREHENSIVE PLAN, 2004

During the 2004 Comprehensive Plan process, an extensive issue identification and visioning component was undertaken to examine the views and opinions of Ankeny residents and other stakeholders on the City's future. This process included regular meetings with a Steering Committee, a community survey, focus group meetings and community meetings. From this process, a community vision and goal statements were formulated with input from the Comprehensive Plan Steering Committee.

VISION STATEMENT

The vision and policy statement guiding Ankeny's future established by the 2002 Comprehensive Plan is as follows:

> **"We see Ankeny as a special place where residents desire to stay, where businesses prosper and, to which visitors and our children want to return. Through good planning, we will continue to ensure that growth occurs in a manner supportive of a family-friendly lifestyle, with housing, employment, shopping, recreation, and enrichment opportunities for all residents."**

COMMUNITY GOALS

The 2004 Comprehensive Plan identified following goals to guide the future development of Ankeny.

1. Ensure that growth occurs within the context of new "neighborhoods", and not separate, disconnected developments.
2. Provide infrastructure investments that correspond to the community's growth potential.
3. Ensure that new development is marked by attractive design and contributes to the community's character.
4. Ensure that development within Ankeny and on Ankeny's periphery demonstrates environmental responsibility and adheres to the City's long-term growth goals.
5. Maintain the unique, separate character of the City, while acknowledging Ankeny's increasingly important role as a member of the metropolitan Des Moines community.

6. Assure that the transportation system is adequate to meet future demands.
7. Maintain variety in the City's housing stock, with dwelling units affordable to a variety of income levels and age grouped, particularly elderly residents.
8. Provide additional opportunities for commercial, industrial, and small business growth and ensure appropriate location in accordance with the City's overall transportation and land use plan.
9. Encourage the development of an interconnected system of parks, trails, and civic parkways and maintain a high level of service for recreational facilities as new neighborhood emerge.
10. Promote the emergence of Ankeny as a major employment center within the area by stimulating growth in office, industrial, and business park development.
11. Strengthen Ankeny's traditional City Center and civic campus as the focus of the community.
12. Promote a sense of community and a premier quality of life as growth occurs.

SMART GROWTH PRINCIPLES

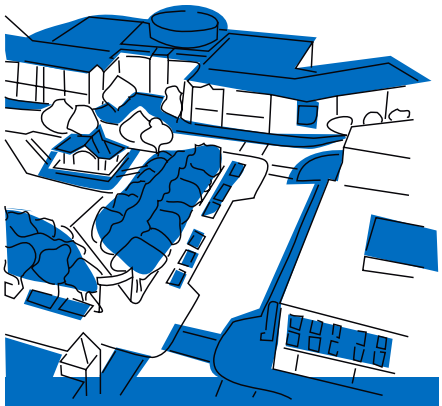
Smart growth has become an increasingly important concept in contemporary development. In the context of Ankeny, smart growth represents a variety of techniques that not only allow the community to accommodate the development that the market produces, but also manage it in a way that maintains a sense of order, efficiency, and unity. Smart growth represents a synthesis between the desire of developers and communities to take advantage of opportunities and public benefits of environmental sensitivity, economic efficiency, and enhancement of community and civic life.

The goal of smart growth is to implement land development principles that are profitable for developers while being community-oriented, environmentally sensitive and contributing to a fiscally strong local government. By establishing a vision for the community's future and practical principles to realize smart growth visions, the development process and protection of public and environmental interests can be completely consistent with one another. Following are the Smart Growth Principles adopted by Ankeny as a part of the 2004 Comprehensive Plan:

1. Encourage Distinctive Communities with a Sense of Place
2. Preserve Open Space and Vital Environmental Areas
3. Mix Land Uses
4. Encourage Human-Scaled Design in Major Activity Centers
5. Create Housing Opportunities and Choices
6. Create Transportation Options
7. Make Full and Efficient Use of Urban Services
8. Achieve Stakeholder Collaboration in Development Decisions and Provide Tools that Encourage the Emergence of a Smart Community.
9. Promote Regional Cooperation

REVIEW OF GOALS AND PRINCIPLES

A review of the 2008 strategic planning document with the 2004 Comprehensive Plan reveals that virtually all of the substantive points in the 2002 Vision Statement, Goals and Principles are encompassed in the strategic plan Vision Statement and Guiding Principles. These statements, combined, guide this Comprehensive Plan Update.



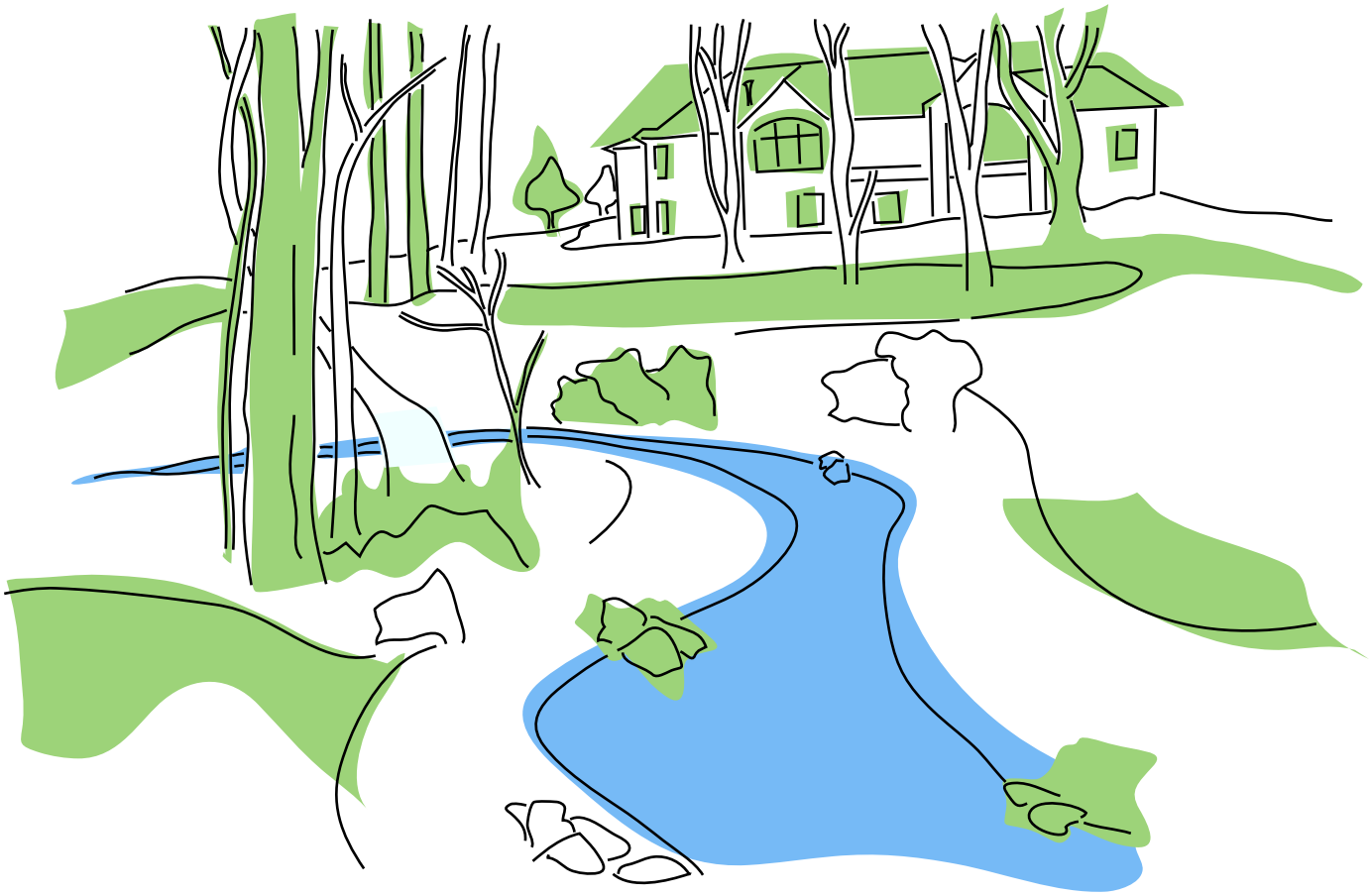
SMART GROWTH PRINCIPLES

- Encourage Distinctive Communities with a Sense of Place.
- Preserve Open Space and Vital Environmental Area.
- Mix Land Uses.
- Encourage Human-Scaled Design in Major Activity Centers.
- Create Housing Opportunities and Choices.
- Create Transportation Options
- Make Full and Efficient Use of Urban Services
- Achieve Stakeholder Collaboration in Development Decisions and Provide Tools that Encourage the Emergence of a Smart Community.
- Promote Regional Cooperation.

4

ENVIRONMENTAL AND STORMWATER CONSIDERATIONS

This chapter highlights the need to protect and enhance the significant stream corridors, called "bluebelts" in developing areas of Ankeny. The chapter recommends directing development to areas suitable for growth, maintaining natural features and ecological functions, and protecting water quality.



ENVIRONMENTAL AND STORMWATER INTRODUCTION

Many of the community goals and smart growth principles that have been outlined in other sections of this plan can only be fully achieved when issues surrounding environmental protection and rainwater management are considered as central to the planning process.

The principle for a safe community where the effects of urban development are mitigated to protect downstream properties and infrastructure from negative impact from flooding, pollution or other impairments.

The principle to promote active lifestyles where a system of open spaces is connected by trails for walking, jogging and biking. These systems could also provide access and public education opportunities around protected or restored wetland, streams and other vital habitats.

The principle for an environmentally sensitive and sustainable city featuring clean surface water and flow control. Developments, facilities and infrastructure are planned to be more environmentally conscious. A network of connected green spaces is provided throughout the City. Effective regional rainwater management is employed. Existing vital environmental areas and open spaces are located and preserved.

The goal of this chapter is to provide citizens, designers, City staff and potential developers with the knowledge to make more informed choices that better protect environmental resources, address both the quality and quantity of rainwater runoff; and effectively manage floodplain areas and major stream corridors to reduce or prevent negative impacts to public and private property throughout the City.

Various sources of GIS data have been reviewed to complete this portion of the comprehensive plan. Aerial photographs were used in concert with LIDAR topographic information and available FEMA flood insurance maps to locate drainageways and flowpaths in future development areas and locate areas subject to ponding or flooding.

County soil maps were used to identify soils with properties adverse to development and highlight areas with steep slopes or soils that are easily eroded. Maps from the national wetlands inventory were used to identify known wetlands where development may be restricted.

DEVELOPING A SENSITIVE AND SUSTAINABLE COMMUNITY

GOALS FOR ENVIRONMENTAL PROTECTION AND RAINWATER MANAGEMENT

To meet the challenges set forth in the proceeding section, the following goals have been established:

Identify and protect key environmental resources such as wetlands, quality wooded areas and stream corridors and preserve their quality and function.

Develop a staged system of ownership and management of flood prone areas along major and minor stream corridors. This goal will establish desired ownership or easement restrictions to manage areas that could be impact from small storms through an event having a 0.2% chance of occurring in a given calendar year (500-year flood event). This will provide for maintenance access and reduce the potential for damage to public and private property and infrastructure.

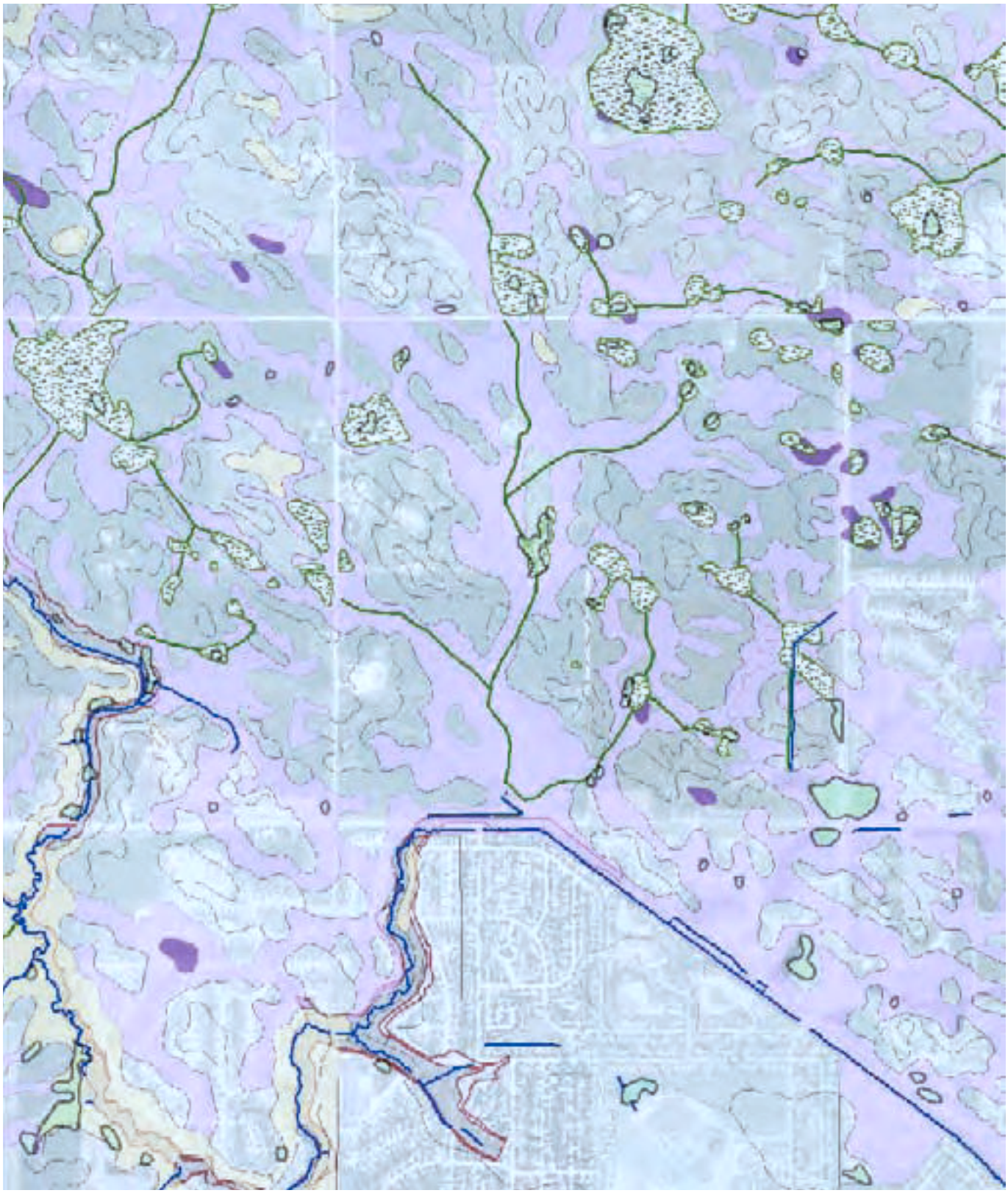
Consider rainwater runoff quality and management early in the design process. A proactive approach allows for site design that works with, rather than against site conditions and has the potential to reduce the cost of meeting rainwater management goals.

Develop site level and development scale management practices that are accessible and maintainable. Practices should be located on land owned by the party responsible for maintenance. Their design should allow for access by types of equipment expected to be used for long-term maintenance. A maintenance program should be established for all practices, with knowledge of who will be responsible to maintain planned controls.

Design management practices that address both small and large storms. Large storm events can cause rapid damage due to erosion and flooding, but occur infrequently. Small storms make up almost all of the rain events in Central Iowa, and need to be effectively managed to address water quality and prevent the rapid rise and fall of water levels in urban streams which leads to a pattern of slow and steady erosion and loss of quality habitat.

a. Constructed Wetland at Precedence Park at Prairie Trail, Plat 5

Figure 4.1: **Environmental Features (topography, soils, flowpaths, streams and wetlands)**



ENVIRONMENTAL PROTECTION AND RAINWATER MANAGEMENT GOALS

- Identify and protect key environmental resources.
- Develop a staged system of ownership and management of flood prone areas along major and minor stream corridors.
- Consider rainwater runoff quality and management early in the design process.
- Develop site level and development scale management practices that are accessible and maintainable.
- Design management practices that address both small and large storms.
- Develop a management systems with a goal of reducing runoff rates and volumes in developing areas to pre-settlement conditions.
- Use rainwater as a resource rather than a waste product.

Develop management systems with a goal of reducing runoff rates and volumes in developing areas to pre-settlement conditions. Agricultural areas also generate higher runoff volumes and rates as compared to natural stream conditions. Many streams can become unstable even under these conditions. Restoring flow rates to these levels in developing areas can help reduce frequent high runoff conditions already being experienced in some of the developed areas within the community.

Use rainwater as a resource, rather than a waste product. Develop rainwater features that meet treatment goals, while being attractive and aesthetic. Create areas that can fit into parks, along trails and other open spaces that can offer the opportunity for residents to interact with nature and understand the importance of pollution prevention and protecting wildlife habitat and water quality.

UNDERSTANDING ANKENY'S EXISTING RESOURCES

Making educated planning decisions starts with a thorough understanding of the natural resources within Ankeny, its surrounding planning area and the larger watershed as a whole.

THE WATERSHEDS OF ANKENY

A watershed is an area of land that drains to a common point or feature, such as a lake, wetland or stream. The City of Ankeny and its current planning study area falls within the watershed of the Des Moines River. This river is a tributary of Red Rock Lake, and the Mississippi River which ulti-

a. Wet Pond detention facility near the High Trestle Trail; b. Wet pond used for water quality and flood detention storage, Precedence Lake at Prairie Trail

mately flows into the Gulf of Mexico.

Storm water runoff from developed portions of the City, as well as the surrounding future growth area, is conveyed to the Des Moines River by a series of smaller tributary streams. The most significant of these are Four Mile Creek, Saylor Creek and Rock Creek. Muchikinoc Creek is also a significant stream which is tributary to Four Mile Creek, however it flows only along the extreme southeastern edge of the current growth planning area.

Four Mile Creek

The Four Mile Creek watershed encompasses over 31 square miles as the stream passes under NE 54th Street on the north side of the City. The stream originates near Slater, passing through primarily agricultural areas farmed as row crops and pasture lands.

The historic terrain of this area was characterized by pothole prairie land forms left after the glaciers of the last ice age receded. These depressions naturally collected and stored surface runoff, allowing it to slowly percolate through subsurface soils feeding the natural streams primarily through groundwater baseflow. As the area was developed into agriculture, many of these areas were drained by subsurface tile lines or small graded swales to make them more suitable for row crop development. Today many of these areas can still be identified by aerial photograph, and often are subject to crop damage from ponding or flowing water during years with higher than average rainfall.

The developed portion of this watershed within the City limits includes primarily areas east of Ash Drive, the abandoned railroad grade through the Uptown area, and its extension along the Union Pacific Railroad. The Briarwood golf course area, the Metro North and Corporate Woods developments and the retail business areas along N Ankeny Boulevard, NE/SE Delaware Avenue and E First Street all drain to Four Mile Creek through the City's storm sewer system.

As Four Mile Creek approaches the City's current southern planning boundary near I-80, its watershed has grown to nearly 84 square miles.

Saylor Creek

Saylor Creek originates from the City's storm sewer network from areas primarily south of First Street, east of Irvinedale Road and west of the Union Pacific railroad grade that serves the John Deere manufacturing facility. The parent stream emerges from a culvert under S Ankeny Boulevard along the northern boundary of the DMACC campus.

Saylor Creek Tributary (as designated by FEMA) originates from a storm outlet on the west side of SW State Street near the John Deere manufacturing facility. These streams converge near the southern edge of the City, on the east side of SW State Street near SW Ankeny Road. At its confluence with the Des Moines River, Saylor Creek's watershed includes nearly 12 square miles, with developed portions of the City comprising approximately the northern half of this area. Prairie Trail, Sawgrass, Somersby, Siena Hills, White Birch and the DMACC campus are all areas which are tributary to this stream.

Rock Creek

Rock Creek begins its meandering journey through the historic pothole terrain adjacent to northern sections of the Four Mile Creek basin. The northern part of the basin has primarily developed into agricultural row crop uses, accommodated by a network of subsurface tiles and altered surface drainage.

There are several notable large wetland areas that typically have a permanent pool of standing water, some even in years of below average rainfall. These features likely temper the amount of water which is converted to surface runoff from this landscape, allowing the stream corridor to remain fairly undefined until it passes south of the High Trestle Trail, although its watershed is already 7 square miles at this location.

a. Four Mile Creek; b.Four Mile Creek; c. Saylor Creek; d. Rock Creek

a. Muchinok Creek; b.Otter Creek; c. Deer Creek

Muchikinoc Creek

This stream is largely located east of the current planning area considered within this document. The source of the stream is approximately near the unincorporated area known as Enterprise, along the easterly projection of East First Street. Its watershed is separated from the Four Mile Creek by a defined ridge line running along what is known as NE 38th Street in rural Polk County.

Some development may occur in the far southern portion of this watershed, should the eastern beltway be extended north from its current interchange with I-80. The watershed of this stream includes approximately 12 square miles of primarily agriculturally developed land at its confluence with Four Mile Creek just north of I-80.

Otter Creek

Otter Creek is a tributary to Four Mile Creek, which drains areas near the Otter Creek golf course and the area surrounding the future interchange at NE 36th Street and Interstate 35. Agricultural uses dominate the landscape within the upper part of this basin, although some areas in the lower part of the watershed have been developed into single-family residential uses.

The terrain in the upper part of the watershed is very flat and similar to the pothole prairie land forms observed in the Four Mile and Rock Creek basins. Moving south, the stream becomes more defined, flowing between steeper hills and bluffs. The watershed of this stream contains over 5 square miles at its confluence with Four Mile Creek on the west side of I-35.

Deer Creek

Deer Creek is a smaller tributary to Four Mile Creek, draining areas primarily east of I-35 and north of E First Street. A small portion of the eastern part of this basin has been developed into large lot-single family development, but the remainder of the basin is primarily used for agriculture.

The upper, northeastern part of the watershed reflects the pothole prairie terrain seen in other basins. The terrain in the lower, southwestern part of the watershed becomes steeper, with the stream corridor becoming more defined, tree-lined and eroded. The watershed of Deer Creek includes over 10 square miles at its confluence with Four Mile Creek, just east of Interstate 35.

HISTORICAL PERSPECTIVE

Reviewing historic survey and aerial photo information of the area around the City of Ankeny offers the benefit of determining how existing conditions have developed within the City's watersheds and how they can be expected to change in the future, if existing patterns of development are applied to future growth areas.

Prior to settlement, the landscape in what

- A watershed is an area of land that drains to a common point or feature, such as a lake, wetland or stream.
- The National Resource Conservation Service has developed the Hydrologic Unit Code (HUC) system which starts identifying watersheds at a large regional scale (i.e. Upper Mississippi) and works its way through five other levels of smaller units identified by a 12-digit number (2 digits for each level). Of the streams passing through Ankeny only Four Mile Creek is identified specifically at this scale, the remaining watersheds are classified as part of the Des Moines River basin.

Figure 4.2: **Watershed Map**

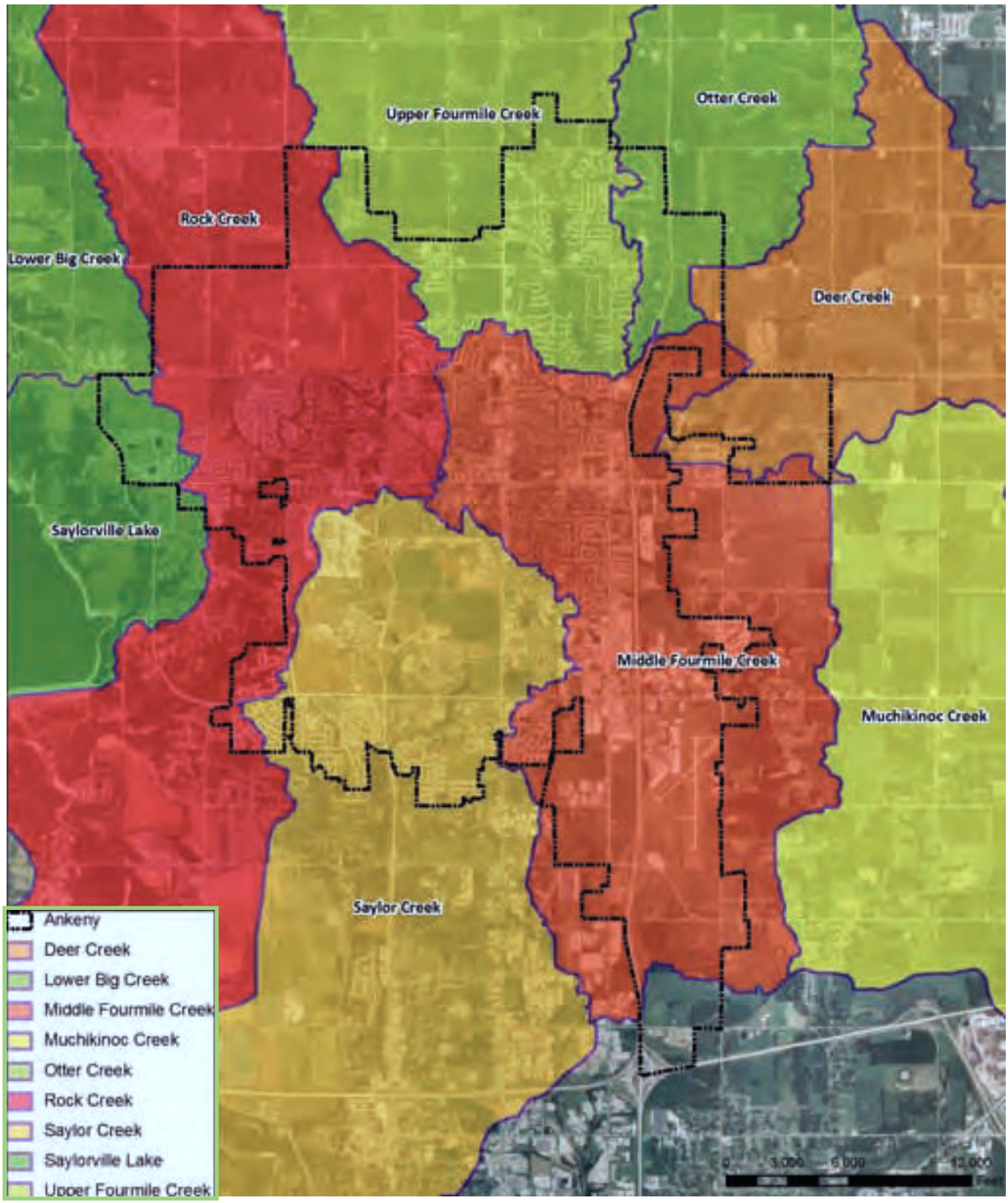
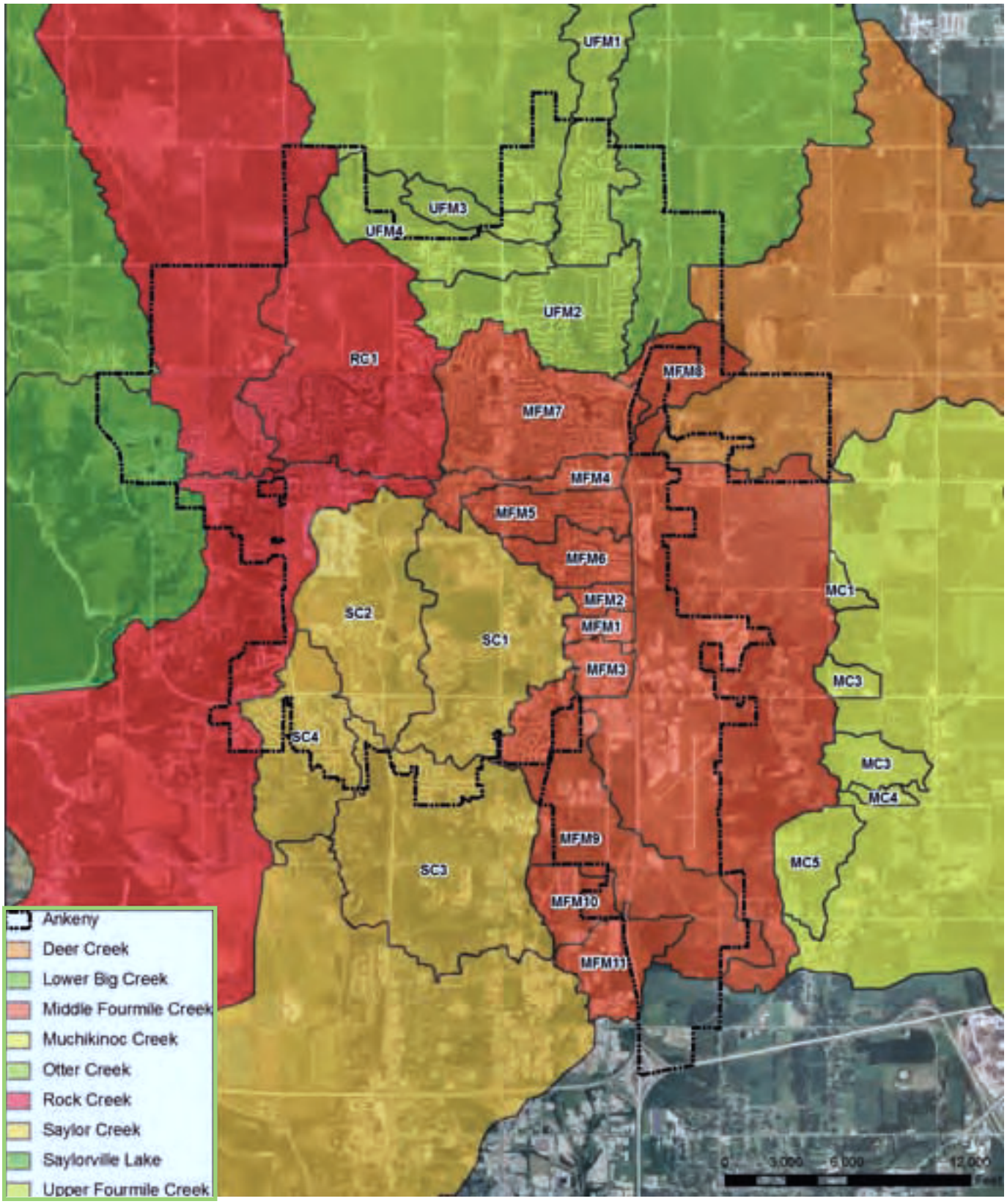


Figure 4.3: **Sub-Watershed Map**



is Ankeny today, would have dominated by tall-grass prairies and pothole wetlands. The deep roots of the plants in these areas absorbed much of the rain that fell from the sky, and kept the soils porous, loose and organic. Even modest rain events would primarily infiltrate into the soil, into the groundwater and slowly be fed as a steady baseflow from springs and brooks into the larger streams of the day.

As these lands were tilled, many of the wetlands were drained through a network of agricultural tiles. Many small drainage paths were straightened to maximize farmable ground, and the loss of native plants led to less infiltration and more surface runoff. Over the decades, this has resulted in bank erosion and widening of streams, especially along creeks and rivers with larger watershed areas.

Aerial photos are available through the Iowa Geographic Map Server from Iowa State University dating back to the 1930's. Several drainage courses that can be identified in these photos are now located within developed portions of the City. Most were typically relatively undefined streams and flow paths through agricultural areas at that time. Some of these drainage paths have disappeared, being replaced by a network of storm sewer pipes in urban developed areas.

Others were left as open drainage courses, although some of those have changed in character, becoming more defined as runoff volumes increased from impervious surfaces and as a constant surface baseflow developed from sump pump discharge lines.

These open streams often became overgrown with trees and brush, limiting the potential for erosion resistant grasses and forbs to become established. Without these deep-rooted plants, increased flow rates and rapid erosion were possible along some of these small streams.

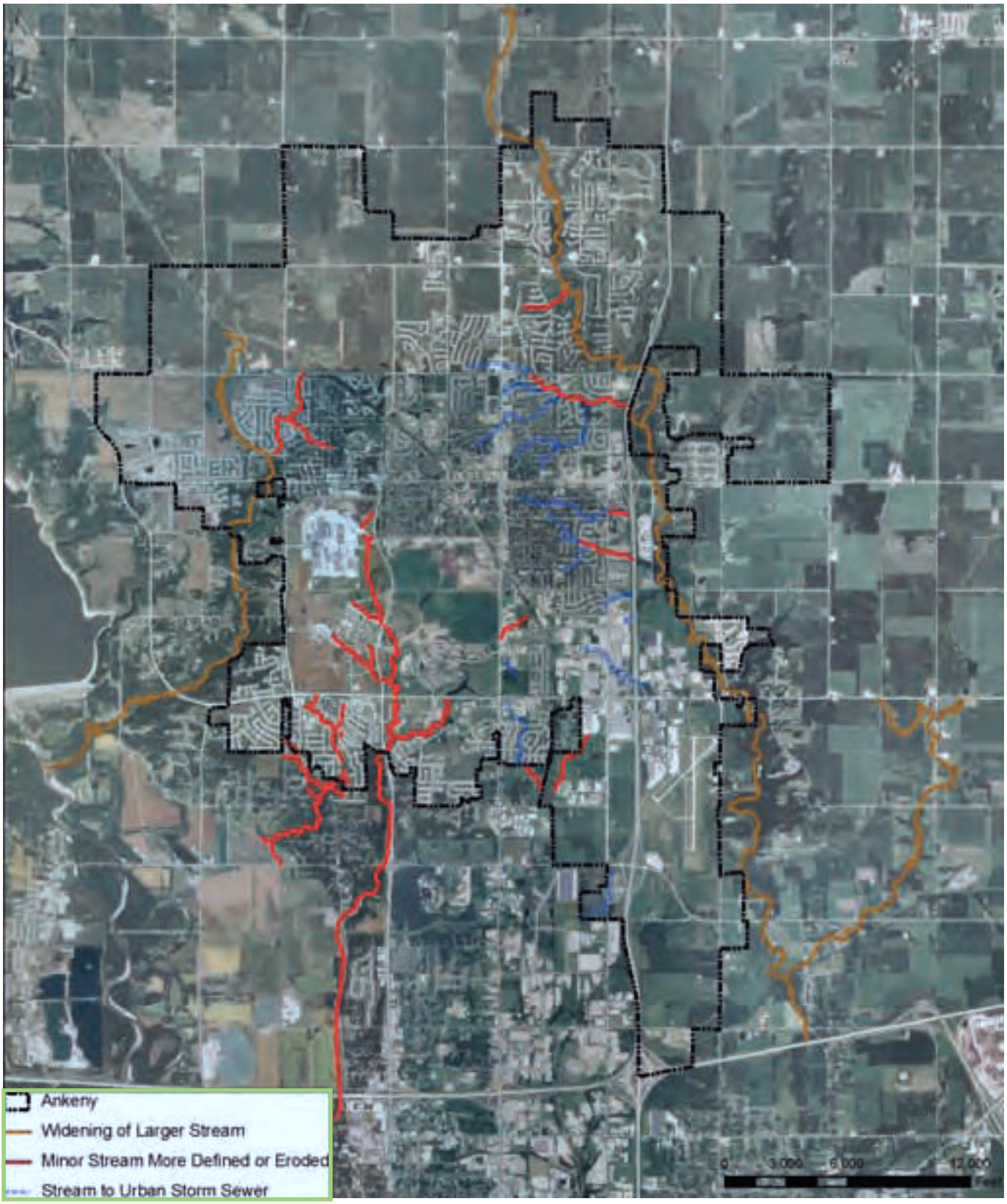
In 1980, a comprehensive review of the City's infrastructure was completed by Veenstra & Kimm. This study identified several areas where storm sewer systems had insufficient capacity to convey the current design storm (a 5-year event, or a storm with only a 20% chance of occurring in any calendar year). This was causing some problems with street flooding and other drainage issues during even relatively common storm events. In addition to identifying specific improvement needs, this report highlighted the need to prevent downstream erosion from development projects and implement storm water detention for private developments (primarily those in commercial and industrial areas). Detention facilities were to be designed to limit large storm events to a peak release rate no greater to what would be expected off of agricultural lands during a 5-year storm event.

The standards in place since 1980 have been relatively consistent with others established for communities across the

HISTORICAL TRENDS

- Pre-settlement vs. pre-development conditions.
- Pre-settlement conditions mean looking at the way rainwater would infiltrate or runoff, before pioneer settlement when native tallgrass prairies, wetlands and forests existed on undisturbed soils.
- Pre-development conditions have traditionally been defined as looking at the land based on agricultural development, with tilled lands with straightened drainage paths and tile lines.
- The volume of rainwater runoff increased as the landscape was developed for agricultural uses because of removal of deep rooted native plants, and compaction of soils through tillage.
- The speed at which this runoff moved across the landscape increased due to straightened drainage paths and installation of tiled drainage systems.

Figure 4.4: **Historic Drainage Patterns**

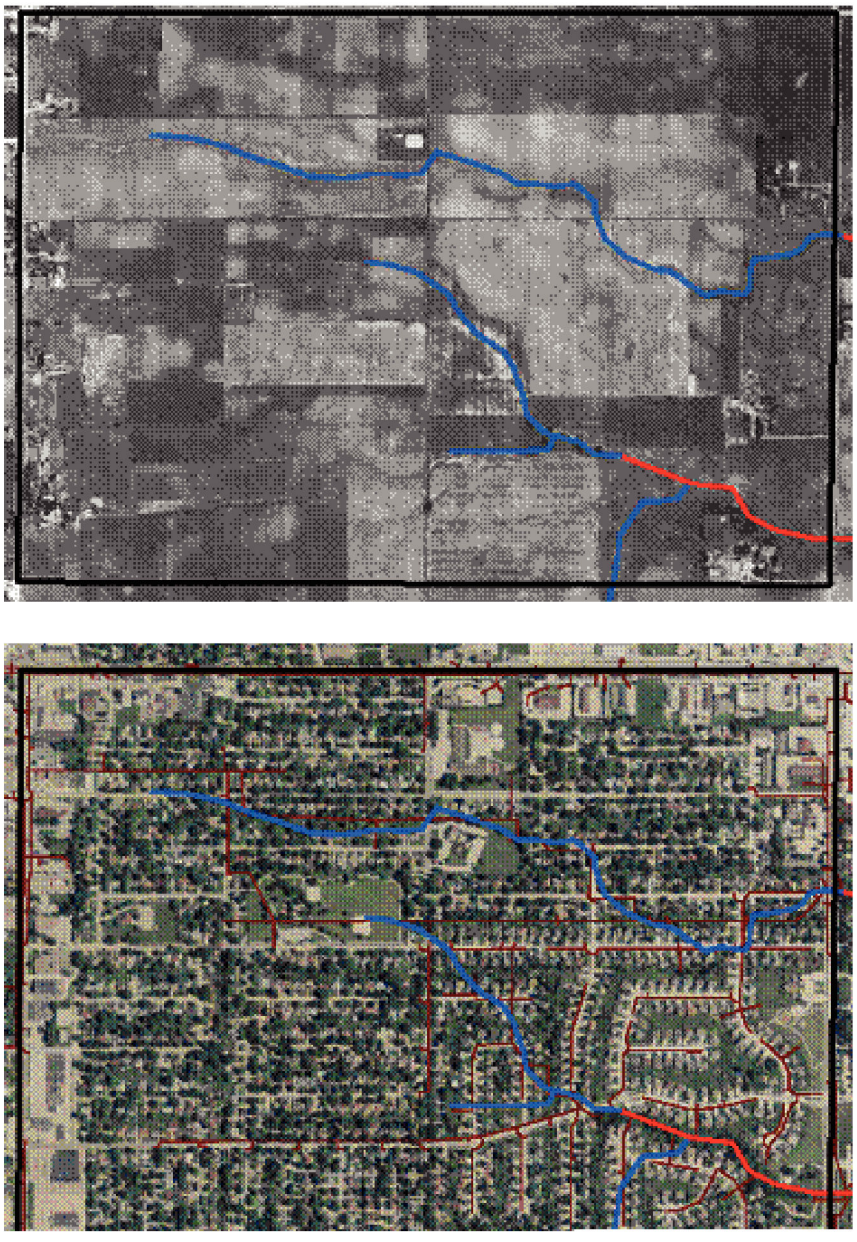


metro area, which have been primarily focused on reducing the potential impact of flooding downstream of developed areas during very large storm events. Recently, more attention has been paid to the effect of smaller storms. Over 90% of the rain events that occur in Central Iowa are expected to be less than 1.25" in depth. Before settlement, the tall grass prairies would have converted only a small fraction of these types of storms into surface runoff. Today, hard surfaces such as roofs, drives and streets shed almost all of the rainfall that falls onto them into a local network of storm sewers, which quickly delivers them to an urban stream corridor.

Rainwater detention facilities designed to current standards to control large storms often have used a single stage pipe to control the release rate from the basin. These pipes are usually too large to control runoff from smaller storms, and allow rainwater from these events to pass through with only a modest level of control. The combination of increased runoff volumes from impervious surfaces; rapid runoff velocities from gutters, flumes and storm pipes; and insufficient control of small storm events means that flow rates and velocities along urban stream channels rapidly rise and fall after even modest rain events.

A pattern of subtle, but repeated erosion

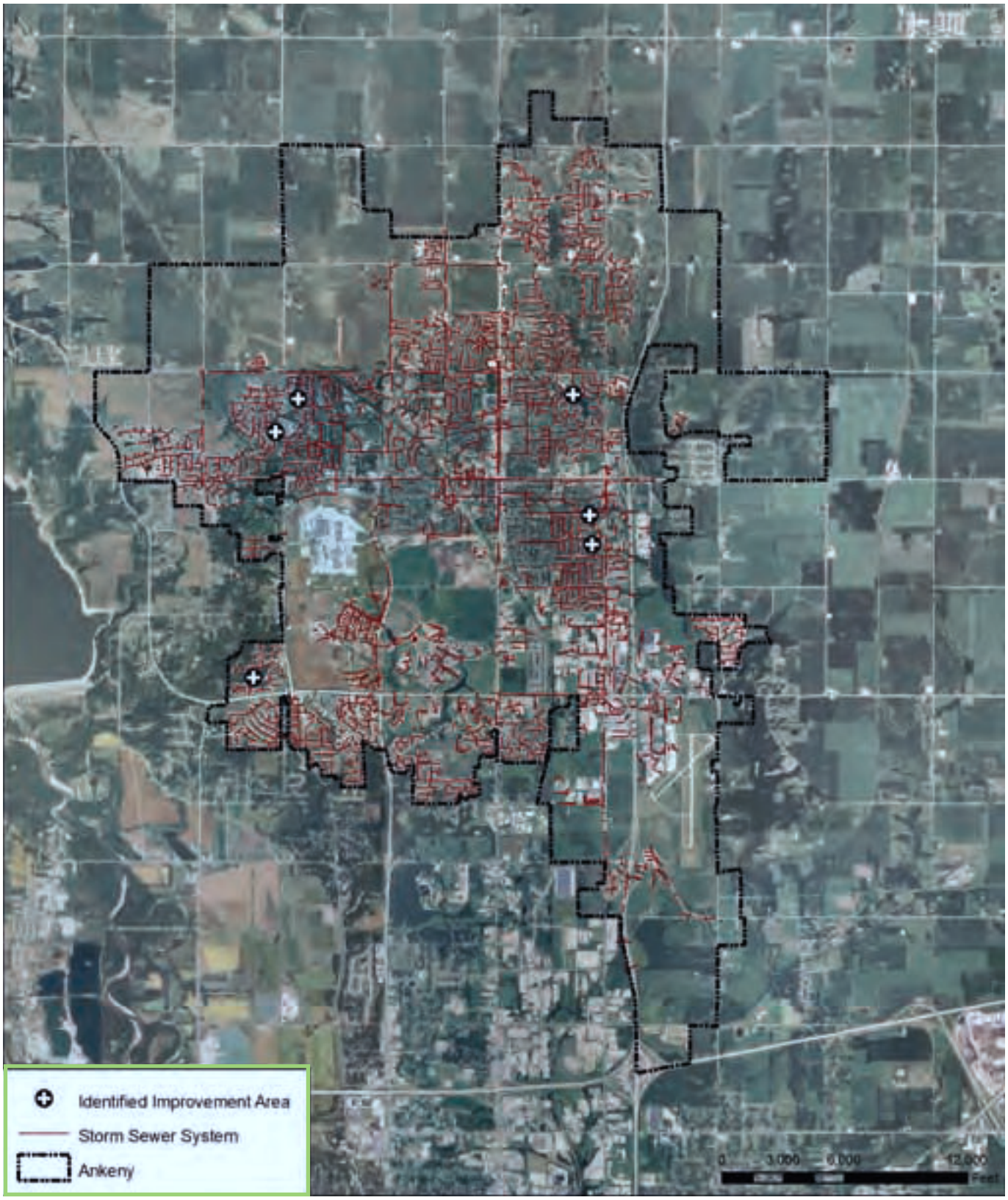
Figure 4.5: **Historic Inset Map**



HISTORICAL TRENDS

- Historical aerial photo from Iowa State University's Iowa Geographic Map Server website. Photo from 1930s according to site records. Using such historic maps from this website, historic drainage patterns can be mapped.
- An aerial of the same location in 2009. The historic open drainage patterns were converted into urban storm sewer systems. Just upstream of SE Delaware Avenue, the stream is very defined and heavily eroded at this location. In the first map, the drainageway is very gentle and undefined in the same area.

Figure 4.6: **Identified Capital Improvements**



occurs along many of these corridors; especially those overgrown with trees and brush where erosion resistant ground cover is not present. Rapid erosion is also possible when larger storms occur, as areas exposed over time by small storms are left unprotected.

The effects of agricultural and urban developments were highlighted in 2008 when several large rain events in June followed wet winter and spring seasons. The City commissioned several studies to analyze the issues resulting from these events in details.

Stream and channel erosion, localized flooding, undersized storm sewers and culverts, restrained flow channels, slope failures and sanitary sewer infiltration were key issues left to be addressed. It will potentially cost millions of dollars to fully repair the issues identified within these studies, which reinforces the need to review the way rainwater is managed to reduce the potential of stream and channel erosion, preserve adequate buffers between stream corridors and structures and prevent the damage of public and private infrastructure.

RESOURCE AND CONSTRAINT IDENTIFICATION

Wetlands

Wetlands are areas which have a unique combination of certain types of soils, water levels and vegetation. These areas can be protected by Federal Law under regulations administered by the U.S. Army Corps of Engineers. Wetlands are protected from impact by development activities under these rules for a variety of conditions. Before disturbing these areas, reports must be reviewed and approved by the Corps that identify which areas are jurisdictional wetlands and how these areas are to be protected, or replaced (mitigated) if they are disturbed.

Wetlands are a valuable natural resource, providing the following benefits:

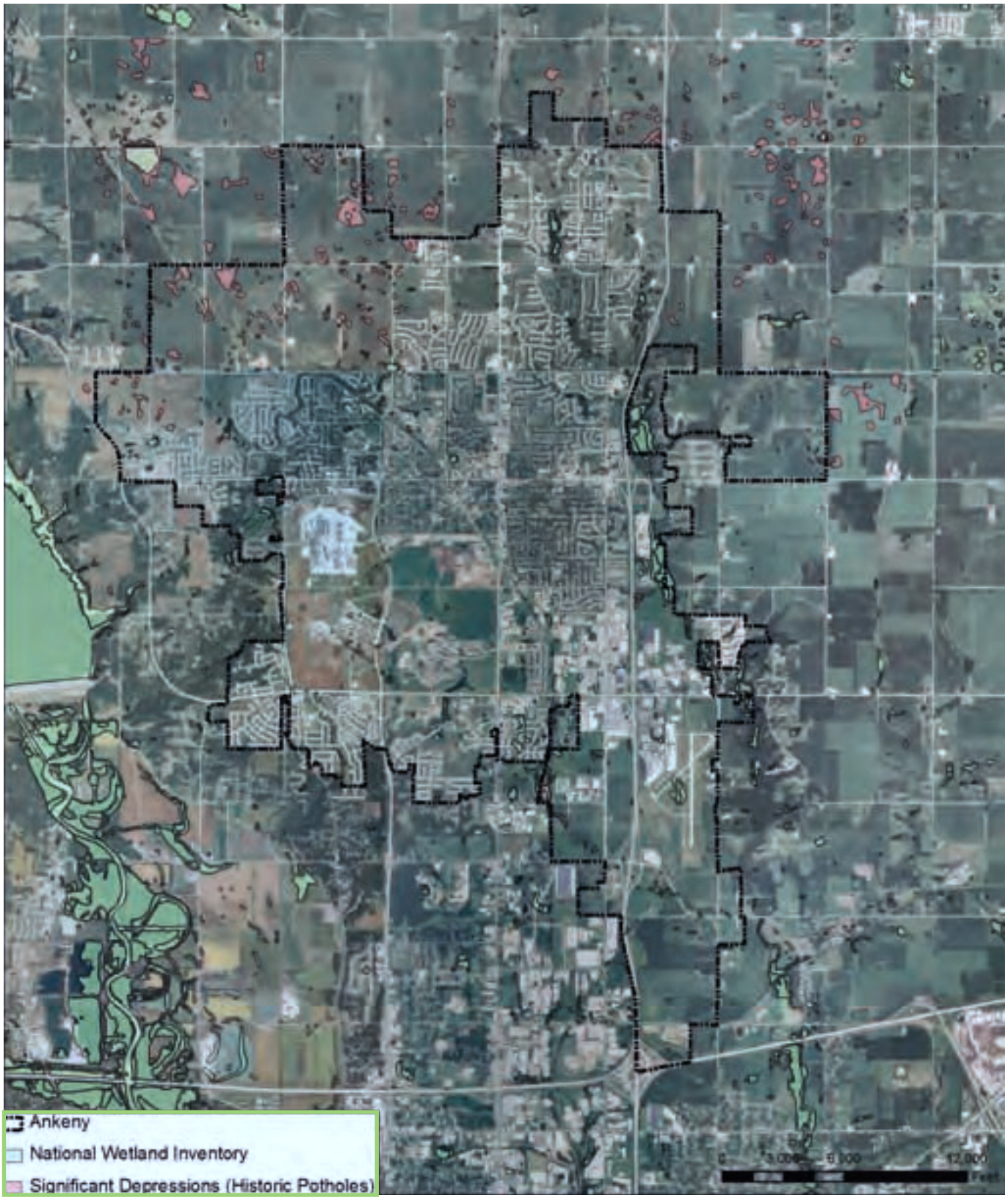
Rainwater runoff volume and flowrate reduction. Wetlands can collect and store rainwater runoffslowing the rate which it is released into receiving waters. This reduces the potential for downstream erosion and can help reduce the impacts of flooding.

a. b. c. d. Constructed wetland near Cascade Falls Aquatic Center in Prarie Trail, starting with construction in the fall of 2008 through establishment in spring 2010.

WETLANDS

- Wetlands slow and reduce rainwater runoff; improve water quality by filtration, settlement and absorption; and can provide habitat to many plants, fish, insects and animals that are native to Iowa.
- Wetland delineation and determination studies are required to determine the actual location and size of wetlands on a given property, and the requirements for their protection or mitigation (if disturbed) based on standards established by the Corp of Engineers.
- The shallow ground water table and subtle depressions that exist in and around Ankeny used to support "pothole prairie" wetlands prior to pioneer settlement before they were drained by tiled systems for agricultural uses.
- In wet years, many of these areas hold water today. LIDAR topographic data and aerial photos from 2008 showing crop damage were used to map likely historic "prairie pothole" areas. The most significant of these are shown on the stream classification map.

Figure 4.7: **NWI Wetland Map**



Data Source: National Wetlands Inventory (NWI) from Polk County GIS

Improve downstream water quality. Wetlands can trap sediments and other pollutants, either through settlement by ponding or absorption by plants. Water can be filtered and slowly allowed to infiltrate into subsurface groundwater. Historically many small streams would have been provided a clean steady base flow in this manner.

Quality wildlife habitat. Healthy, balanced wetlands can be home to a wide array of plants, insects, fish and other animals.

For all these reasons, wetlands are vital resources that need to be protected from sedimentation, dewatering or site grading activities to the greatest extent possible. Figure 4.7 depict the wetlands established from GIS data from the National Wetlands Inventory.

Quality Open Spaces

Reviewing other valuable natural and historic resources can provide a framework for a network of high quality open spaces. This can offer opportunities to integrate watershed management needs into the planning of future parks, trails and other reserved areas.

Quality Wooded Areas:

Well managed treed areas, especially those with mature native trees provide important habitat for a variety of birds, insects and animals. Wooded areas reduce rainfall runoff and protect surface soils from erosion caused by rainfall. These areas need ongoing maintenance to prevent understory overgrowth and to control invasive species.

Within the planning boundaries established as part of this plan, most of these areas are located on steep slope areas east of Interstate 35 and those along Rock Creek in the western part of the City.

Prairie Remnants:

These areas can prevent erosion, absorb pollutants and reduce rainwater runoff.

a.Existing Wooded Area in Ankenny; b. Existing Prairie Remnants; c. Stream Corridor

They also provide a valuable seedbank for native flowers and grasses that can help to add diversity to any native planted areas constructed nearby. They offer important habitat to a wide variety of species.

Stream Corridors:

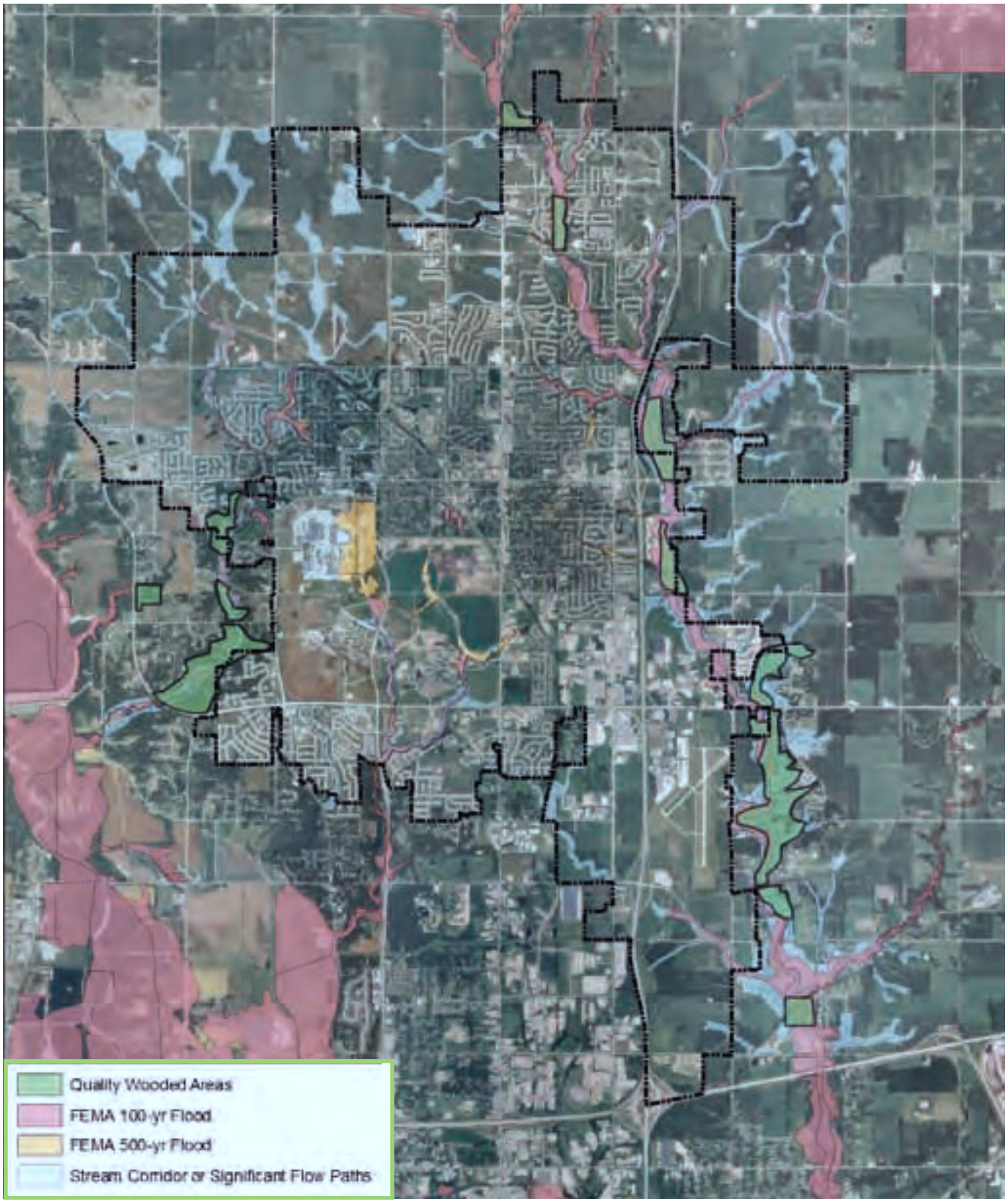
Maintaining a healthy buffer along both small and large streams offer the following benefits:

- Absorption and filtration of rainwater runoff.
- Establishment and protection of wildlife habitat.
- Reduced streamflow velocities and streambank erosion.

QUALITY OPEN SPACES

- Many of the historic wooded landscapes around Ankeny have formed in areas that were less suitable for row crop agricultural uses.
- These were commonly fence rows or buffer strips or drainage ways in which trees would establish if these areas weren't kept clear through maintenance, mowing or grazing.
- While many historic and quality trees have been established in these areas, the understory can often be dominated by invasive smaller trees, shrubs and plants.
- These can crowd out more desirable erosion resistant plants and make it difficult to access these areas for private recreation, public use or maintenance.
- Routine maintenance of many of these areas is needed; such as selective cleaning, trimming, mowing or controlled burning to manage available sunlight, control invasive species and make room for more desirable native plants and wildlife.

Figure 4.8: **Quality Open Space**



Data Source: FEMA FIRM Map Data from Polk County GIS

- Provision for safe storage and conveyance of large storm runoff
- Moderation of downstream flooding.

Archeological Sites:

Many sites with historic and prehistoric value have been identified within the City of Ankeny. The value of these sites can be lost forever if disturbed through land development, erosion or demolition.

Figure 4.8 depict the open spaces established from GIS data from the National Wetlands Inventory.

Soil Conditions

Soil properties should be a key consideration when planning future development within the city. Countywide soil survey maps offer a great deal of information on the general properties of soils common in Iowa, including their benefits and liabilities with respect to land development activities. The presence of shallow water tables, steep slopes, or soils prone to erosion may require special planning, construction methods or other limitations.

Fully hydric soils:

These soils often have a shallow water table and are often located near swales, depressions and flood plains. Special construction practices are often required to safely construct improvements such as streets, utilities and structures in these areas. These soils may also indicate the presence of jurisdictional wetlands. Development should be limited as much as possible in these areas.

Depressional, fully hydric soils:

These areas often exist in shallow depressions and are often prone to seasonal shallow flooding. Many of these areas are located along flood plains or were once part of prairie pothole wetlands that were common in Iowa prior to agricultural development. These areas should be reserved from development and are candidates to be reestablished as wetlands.

Steep Slopes (14% or greater):

It is extremely difficult to prevent erosion and re-establish stable vegetation on steep slopes disturbed by construction activities. Exposed slopes can be prone to gully erosion and slope failures potentially causing downstream siltation, erosion and flooding. Structures constructed near the top of steep slopes can be impacted if sufficient separation is not maintained from the base of the structure to the toe of the slope. Construction in these areas can also harm the scenic character of these areas, especially if they are established with quality woodlands or native prairie flowers and grasses. These issues need to be addressed before allowing development on or near these slopes.

Moderate Slopes (5 to 14%) Prone to Erosion:

Some soils are more prone to erosion when disturbed than others. Preventing erosion and sediment loss and re-establishing vegetation on these areas when graded may require more effort than normal. Proper pollution planning and vegetation management will be needed in these areas.

Prime Farmland:

Central Iowa is well known for the nutrient rich, deep topsoil that has helped local agriculture feed the world. As such, it is desirable to reduce the amount of prime farmland that is converted to urban land uses. However, based on data from current Polk County soil maps, with the exception of areas along some the major stream corridors, nearly all of the land surrounding the City of Ankeny is considered to be "prime farmland".

A more detailed review of data shows that in general when soils are well drained, lands immediately north of the City are considered slightly better than those to the east of the City. This indicates that farmland considerations should not dictate specifically where development

a. Prime Farmland;

should be promoted or limited, but should result in promoting higher development densities and making more efficient use of developable land that is free of other environmental concerns.

Table 4.1 presents the guidelines for considering soil constraints. Figure 4.9 depict the soil conditions established from GIS data from the soil survey.

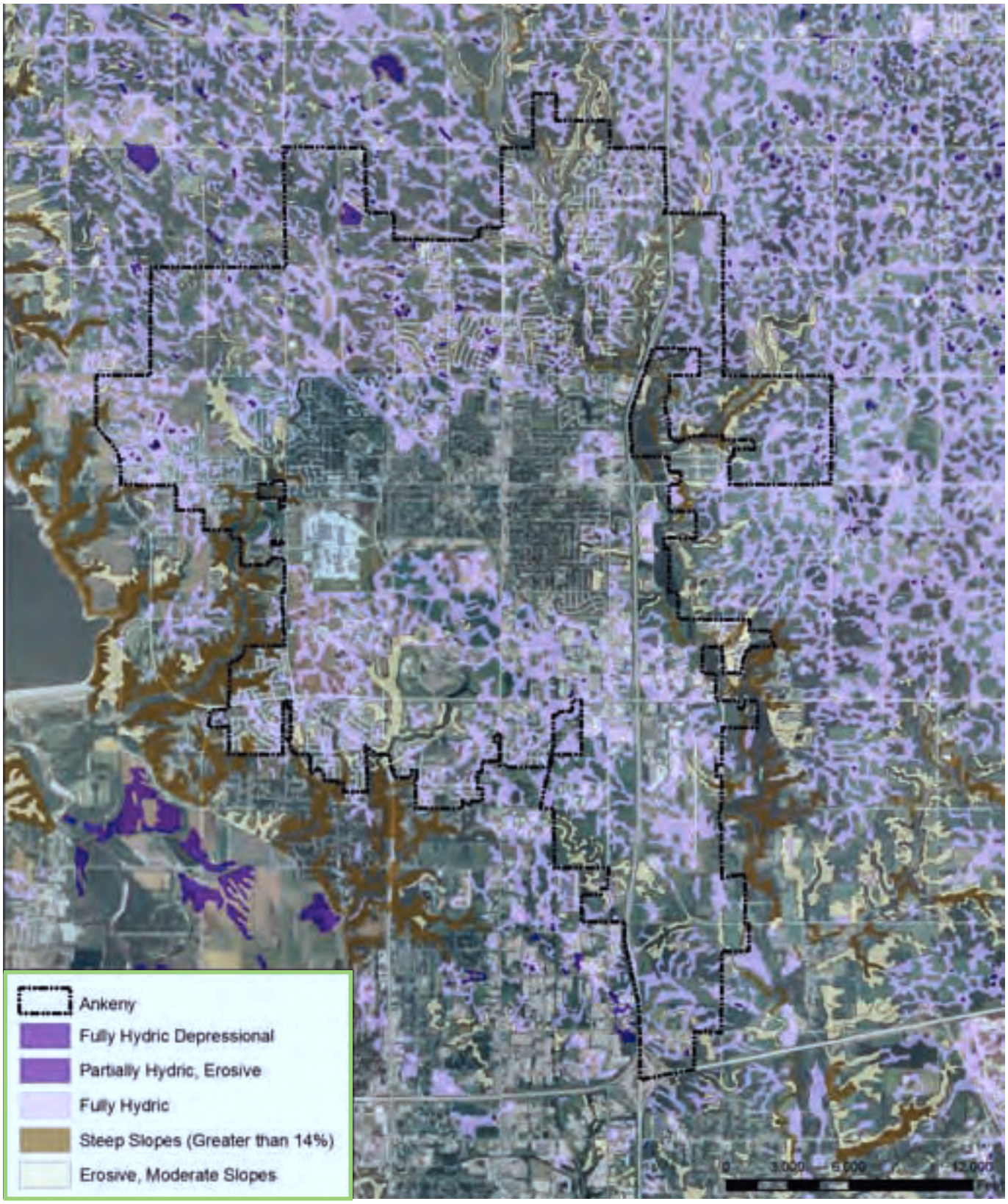
Stream Corridors and Flow Paths

Many of the storm water issues identified in this chapter highlight the need to protect and enhance the significant stream corridors in developing areas. The areas considered to be protected adjacent to these streams serve a variety of important functions:

Flood protection and containment. A corridor needs to be preserved along significant stream corridors to convey runoff from the 100-year flood event (an event having a 1% chance of occurring in any given year) in a manner that protects private and public property from damage. Provisions to convey the 500-year flood event are necessary within either a parcel dedicated as open space, or by easement on private land (along streams with small watersheds).

Maintenance of existing drainage paths and travel velocities. Runoff may travel faster through a watershed when it is forced into a narrower channel section or where the flow path is shortened through grading or other activities. By increasing speeds, or shortening the travel distance through a watershed, runoff generated

Figure 4.9: **Soil Conditions Map**



Data Source: 2000 County Soil Map Data from Polk County GIS

from an area reaches the downstream end of the watershed more quickly, meaning that a larger portion of the water will arrive at nearly the same time. This increases the peak rates of flow and can lead to erosion and local flooding issues.

Protection of land forms, features and vegetation that reduce surface runoff. Surface depressions, porous soils, wetlands, native plants and trees all help retain or absorb surface runoff that would travel through the stream corridor. Preserving these features allows for greater retention of storm water volume, slower runoff velocities and extended travel time of runoff through the corridor.

Ability to provide ongoing access for maintenance. In urban areas, many erosion and flooding issues that develop along urban stream corridors become more difficult to address when access to the stream corridor is limited by private property or the proximity of existing homes, utilities or other structures. Reserving and creating trails or other clear paths for maintenance allows for ongoing inspection to identify any issues early before they become larger, more costly repairs. It also allows appropriate routes for construction equipment to access the area, when such repairs become necessary.

Ability to protect slope stability and provide for future repair needs. When development occurs along a defined stream corridor (especially a corridor with more than 0.5% slope having the potential for downcutting and further erosion) it is desirable to provide for enough width to pull back steep slope areas from the toe of the stream at a maximum 4:1 slope. This allows for future erosion issues to be addressed as inexpensively as possible, and prevents private land area or structures from being located in a "failure zone" where slope stability could be compromised leading to damage to private property or structures.

Establishment of enhanced habitat and limitation of invasive species. Stream corridors provide connected, continuous corridors for a balanced array of wildlife. Native plants and flowers reduce storm water runoff, while enhancing habitat for insects and animals that prey on nuisance species. Natural riffles and pools in streams help support the local fish population, and offer connected paths for seasonal migration and spawning. Proper access management provides the opportunity to control undergrowth and influx of invasive species that can overrun desirable erosion resistant surface vegetation.

Enhancement of water quality along the stream corridor. Proper management and enhancement of stream corridors reduces the potential of bank erosion along the stream corridor, saving large amounts of sediment from being washed downstream each year.

a. Wooded Area; b.Water Feature;

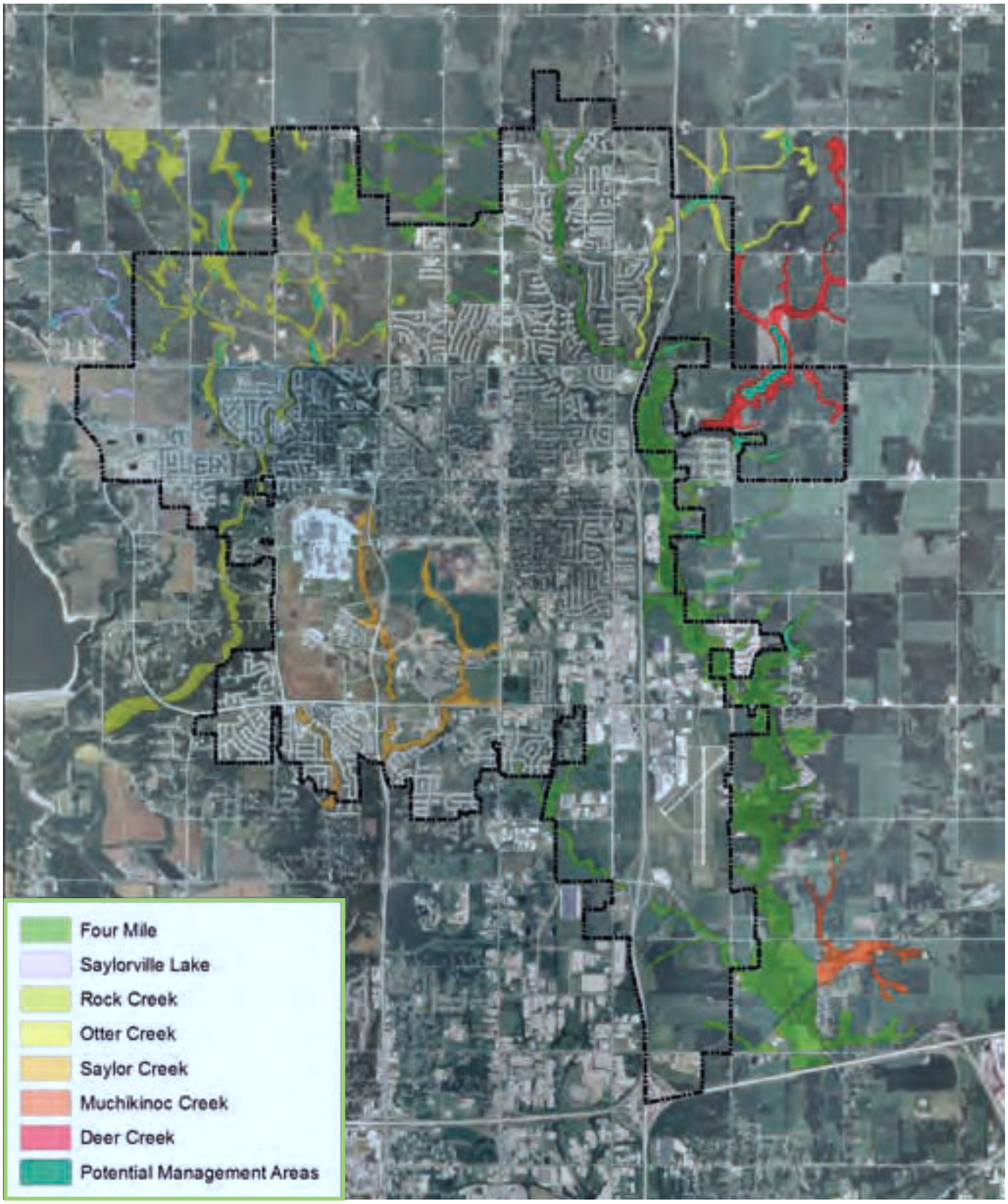
Appropriate bank and stream vegetation can also help trap and absorb some pollutants that have already been transported and suspended in the stream flow.

Provide for recreational and educational opportunities. Access paths serve an excellent dual purpose as walking paths or recreational trails. This allows the public to interact with nature, turning a stream corridor into an amenity to support rather than a liability to ignore. Sign posts and kiosks along such trails can educate residents on storm water issues, as well

Table 4.1 **Guidelines for Considering Soil Constraints**

Soil Category	Soil Characteristics
Fully Hydric Soils	Subdrains, foundation drains and dewatering practices may be necessary to develop within these areas. Reserve as open space where they coincide with surface drainage paths.
Depressional Fully Hydric Soils	Development not recommended - prairie pothole hydrology.
Steep Slopes	Avoid disturbing these slopes, provide adequate setback of structures for slope stability.
Moderate Slopes, Prone to Erosion	Expect additional erosion and sediment controls will be necessary.
Prime Farmland	Use developable land efficiently to reduce conversion of farmland to urban uses.

Figure 4.10: **Reserved Open Space Map**



as the purpose and function of features along the stream corridor. Strengthening a connection between residents and the stream may alter secondary behavior as well, such as excessive use of lawn fertilizers, irrigation or dumping into streams or storm intakes.

STREAM CLASSIFICATION

While each stream is unique in size and character, the corridors within the City of Ankeny and the surrounding planning area can generally be grouped into four categories to determine the level of preservation or enhancement that is desirable:

Major Defined Streams (Category A):

Four Mile, Saylor, Rock and Muchikinoc Creeks

These streams have established flood plains, baseflows and watershed areas of several square miles. Proper buffer protection and management and shoreline protection are key concerns for these streams. Ongoing maintenance may be required to control invasive species and to prevent larger erosion issues from being created. Such issues are difficult to be handled by either a private homeowner or an association of local property owners. City ownership of the 500-year flood plain (0.2% annual chance or recurrence) is preferred along these corridors.

Minor Defined Streams (Category B):

Deer, Otter, North Creeks; smaller unnamed urban streams

These streams have smaller watersheds than the Major Defined Streams and may or may not have established flood plains. They usually have normal baseflows and have defined stream banks, some of which may be steep and eroded. As with Category A Streams, proper buffer protection and management and shoreline protection are key concerns for these streams, as well as provisions for ongoing maintenance. Ongoing maintenance requirements may still exceed what homeowners or private associations can provide. City ownership of the 100-year flood plain (1.0% annual chance or recurrence) is preferred along these corridors. The 500-year flood plain should be protected by easements where it extends onto adjacent private property.

Major Unchannelized Streams (Category C):

Lesser defined stream corridors in developing areas with significant watersheds

These streams do not usually have established flood plains and are less eroded or downcut, often lacking defined streambanks. These areas either have established baseflows at the surface or via tile networks thorough agricultural areas. These corridors often have watersheds of 60 – 2000 acres (but can be up to several square miles in size in some cases). As development occurs around these corridors, the concern is that they may become more defined, eroded and channelized – leading to faster flow velocities and higher peak flow rates. City ownership of the 500-year flood plain (0.2% annual chance or recurrence) is preferred along these corridors.

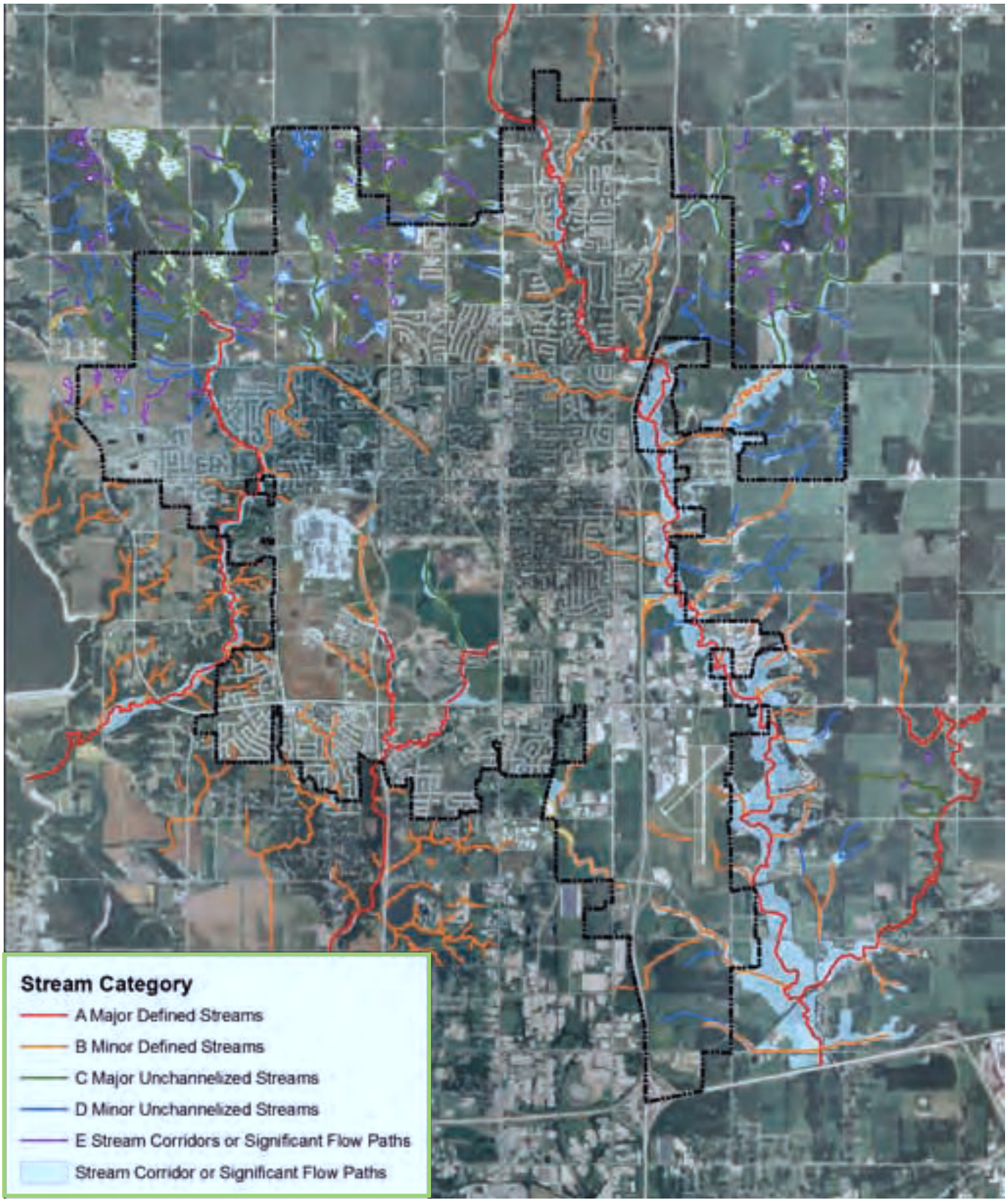
Minor Unchannelized Streams (Category D):

Smaller streams and flow paths in developing areas

These streams may or may not have established baseflows and usually have watershed areas of less than 80 acres. These corridors should be protected or enhanced through the site development process, but likely could be maintained by a private entity as long as maintenance access is available through appropriate building setbacks and required easements. Public or private ownership of these watercourses could be considered on a case by case basis at the site development stage. Ownership of these areas within single-family lots should be discouraged. Areas impacted by a 25-year

a. Major Defined Streams (Category A); b. Minor Defined Streams (Category B); c. Major Unchannelized Streams (Category C); c. Minor Unchannelized Streams (Category D)

Figure 4.11: **Stream Classification Map**



flood (4% annual chance or recurrence) should remain outside of single-family residential lots, and should be owned by the City or another private entity responsible for maintenance. Areas expected to be impacted by a 500-year flood should be protected by easements where it extends onto adjacent private property.

Small swales and drainageways (Category E):

Swales and minor flow paths in developing and developed areas

These are areas of concentrated drainage with smaller watersheds (usually under 20 acres). The location of these features should be used to influence grading and development plans, but flowpaths of this order do not necessarily need to be preserved through the development process. These areas may develop into swales, storm sewers or other types of conveyance as site planning occurs. These areas are also good locations for Best Management Practices (BMPs) to address water quality and rainwater runoff volume reduction.

For open drainage paths, areas impacted by a 25-year flood (4% annual chance or recurrence) should remain outside of single-family residential lots, and should be owned by the City or another private entity responsible for maintenance. Areas expected to be impacted by a 500-year flood should be protected by easements where it extends onto adjacent private property.

Common property drainage:

Rear yard swales and conveyance across multiple parcels.

In urban areas, there are many areas where runoff will flow from one private property onto another before it can reach a stream or inlet to the public storm sewer system. Most of these areas have drainage areas of a five acres or less. Access and flood protection should be provided by easements on private land.

Figure 4.9 depict the stream classifications by category.

GUIDELINES FOR ENVIRONMENTAL PROTECTION AND RAINWATER MANAGEMENT

Over the past few years, there have been efforts to change design standards related to the way rainwater and resources are managed in Central Iowa. Many areas throughout the Des Moines metropolitan area that have been developed following the design standards and state of the art practices of the day, have failed to clean surface runoff; prevent streambank erosion and damage to wildlife habitat; and temper rapid urban stream flows. This section describes changes in the way that resources and rainwater are expected to be treated in developing areas that are consistent with current Federal and State regulations, as well as new design standards established by the Iowa Stormwater Management Manual, a developed regional standard for management of small and large rain events prepared by Iowa State University's Center for Transportation Research and Education.

ANKENY'S "BLUEBELTS": REGIONAL RAINWATER MANAGEMENT

As mentioned earlier in this chapter, various sources of information have been used to identify areas with site conditions adverse to development (steep slopes, hydric soils, periodic flooding) and areas with important resources to protect (wetlands, quality open spaces and stream corridors). By overlaying these conditions on a map, corridors can be identified that reserve these areas from development. Most of these corridors follow along significant drainage paths and stream corridors that run through potential development areas surrounding the community.

These interconnected corridors are to be known as "bluebelts" as they may

a. Small Swales and Drainageways (Category E); b. Common Property Drainage

seem similar to linear greenbelt parks and open spaces, but much of their design will revolve around the protection of habitat, natural resources and the safe conveyance and treatment of rainwater. Most bluebelt corridors are located along streams and flow paths with watershed areas of hundreds or even thousands of acres. In the past, similar corridors would have often become the responsibility of individual homeowners or a private association. Over time many of these corridors have become overgrown with trees and brush, and heavily eroded. These issues that have developed over several years, or even decades, can be very expensive to repair and access is often limited by private uses and structures located in close proximity to the stream corridor.

As it is established over time, the bluebelt network is expected to be designed to achieve the following goals:

Reserve a safe path of conveyance up to the 500-year flood event. It is expected that after development no structures will be constructed within the area expected to impacted by such an event.

Construct aesthetic improvements that provide rainwater management for both small and large storms. Constructed wetlands, lakes and streams can be attractive features located along public trails in a park like setting, while serving a larger treatment purpose. These features can prevent the rapid "bounce" effect of streams that can accelerate channel erosion, while also reducing the effect of flooding during larger storms.

Prevent extensive narrowing or channelization of the stream corridor. Confining lesser defined streams into narrow defined ditches or pipes can dramatically increase the speed that water runs across the landscape, leading to higher peak flow rates. Since rainwater reaches downstream areas more quickly, more of the runoff reaches downstream restrictions (such as a bridge or culvert) at closer to the same time. This can lead to higher flood elevations, more rapid flow and increased bank erosion, even if the overall volume of water runoff is unchanged. Where lesser defined flowpaths exist, it is desirable to maintain their existing cross-section as much as possible.

Promote landscapes and design features that are resistant to bank erosion. Establishing erosion resistant deep-rooted native vegetation, maintaining stable slopes and providing bend protection at key points can prevent larger more expensive erosion issues from occurring.

Install features that provide for a quality, balanced habitat for wildlife. Features that support fish, butterflies, dragonflies, frogs and turtles provide a more balanced ecosystem that can help control the populations of other unwanted species (such as mosquitoes).

Provide access for recreation and long-term maintenance. Location of trails and paths along the corridor helps expand the City's system of trails while providing key access points for equipment needed for maintenance and repairs. As with any improvement, an effective program of maintenance can ensure systems are working as designed and can greatly reduce the potential for more costly repairs. These corridors can also provide accessible corridors for other City infrastructure, such as sanitary sewer trunk mains.

Each bluebelt corridor will be unique based on the size of its watershed, the resources it includes, the topography of the area and the surrounding land uses. In general, bluebelts will consist of three key elements: (1) entrance pretreatment areas, (2) stream buffers and (3) regional rainwater management areas.

Entrance Pretreatment

Before runoff can enter the bluebelt network, methods of pretreatment are necessary to address runoff from untreated public streets, undeveloped agricultural areas and outfalls from site management areas to assure that pollutants are not being discharged from individual development sites. It is important to provide accessible locations where pollutants can be collected and removed. This can reduce sedimentation and pollution of downstream channels that would typically lead to habitat loss and channel erosion.

Stream Buffer Establishment and Maintenance

In order to preserve and enhance the multiple benefits of stream corridors as described in this chapter, it is necessary to establish buffers of appropriate width and size to meet as many of these needs as possible. Different types of buffers need to be established for the different categories of streams:

Major and Minor Defined Streams (Category A and B) need buffers primarily fo-

Figure 4.12: **Typical Cross-section Elements - Well Defined Streams (Category A and B)**

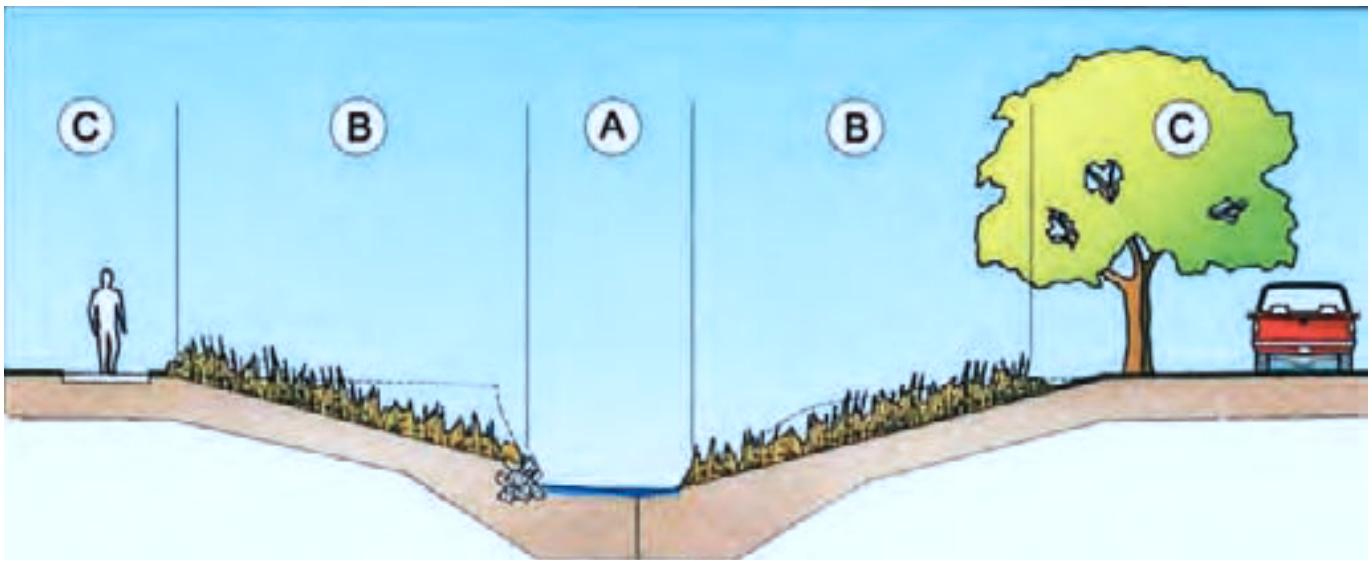


Table 4.2 **Stream Buffer Protection Guidelines - Major and Minor Defined Streams (Category A and B)**

		A Flow Section	B Transitional Section	C Access Path
Purpose		Bottom of swale or creek expected to be seasonally or constantly wet. Bottom edges (toes) of defined streambanks included.	Buffer width necessary to maintain or repair slopes to a stable grade of 3:1 or flatter (6:1 preferred). Safely convey minor storms and smaller flood events.	To provide rights for access and a clear path for maintenance equipment to reach the stream corridor to evaluate its condition, remove brush and debris as necessary and address erosion issues as they occur. Safely convey larger flood events.
Conveyance Requirement		This section should convey the peak rate of flow from a 1-year, 24-hour storm event.	The peak rate of flow from a 25-year, 24-hour storm event should be contained within this section.	The peak rate of flow from a 500-year, 24-hour storm event should be contained within this section.
Vegetation		Wet tolerant, deep-rooted native grasses and sedges. Portions of streambed may be free of vegetation.	Erosion resistant native grasses and forbs tolerant of a variety of moisture conditions. Growth of trees and brush should be controlled to allow adequate sunlight to reach surface.	Maintain a clean edge against transitional section. Promote shorter varieties of native grasses or turf lawn applications along access paths and trails. Taller native varieties should be kept at least 10' off the edge of paved trails.
Stream Type	**Access and Ownership**	**Minimum Width for Each Section**		
A	Paved trail (one side), clear grass path (other side) City Owned	defined by existing channel	No less than 50' each side, but wider as needed to establish minimum 3:1 slopes and meet conveyance requirement.	Maintain a clear 20' path (both sides) and meet conveyance requirement.
B	Paved trail (one side), clear grass path (other side) City Owned	defined by existing channel	No less than 20' each side, but wider as needed to establish minimum 3:1 slopes and meet conveyance requirement.	Provide at least a 20' clear path (both sides) and meet conveyance requirement.

cused on protecting the existing floodplain area from development. Selective tree clearing and removal will be an ongoing need to manage undergrowth and invasive species. This will aid in improving access, stream visibility and establishment and maintenance of deep-rooted native plants and flowers. Existing wetlands can be protected and new wetlands established in low lying areas and depressions within in the stream corridor. Access paths should be established by mowed vegetated paths or by constructed recreational trails.

As development occurs along these corridors, conservation buffers should be set aside as open space parcels, ideally to be conveyed to City ownership as part of a park, conservation or "bluebelt" areas. The width of this buffer should accommodate the width of the stream, access paths on both sides of the stream and the entirety of the established 100-year flood plain (or 500-year where already established on FIRM maps). The buffer should also be wide enough to accommodate the need for slope pullback in areas with steep or eroded stream banks. The width of the buffer should allow for pulling back slopes from the base of the stream at a slope of no greater than 4:1, with a required clear access path of 20 feet on each side of the stream with a cross-slope of no greater than 10:1.

Major and Minor Undefined Streams (Category C and D) need buffers that respect the existing topography near the existing flowpath. Even though floodplains have not been identified on FIRM maps for most of these streams, the need to protect the extent of the 500-year flow limits is no less. Where flow paths are less defined and shallow, the buffer may need to widen to convey design flows more slowly over a wider, shallower flow path (without requiring the stream to be channelized). The buffer will likely be composed of three elements:

- A flow section, established with taller wet grasses that may only be maintained during extended dry periods or as possible on a seasonal basis. (Width to be determined to convey at least the anticipated 10-year, 24-hour peak runoff rate).
- A transitional section (20-40 feet wide on both sides of the stream) of shorter

Figure 4.13: **Typical Cross-section Elements - Undefined Streams (Category C and D)**

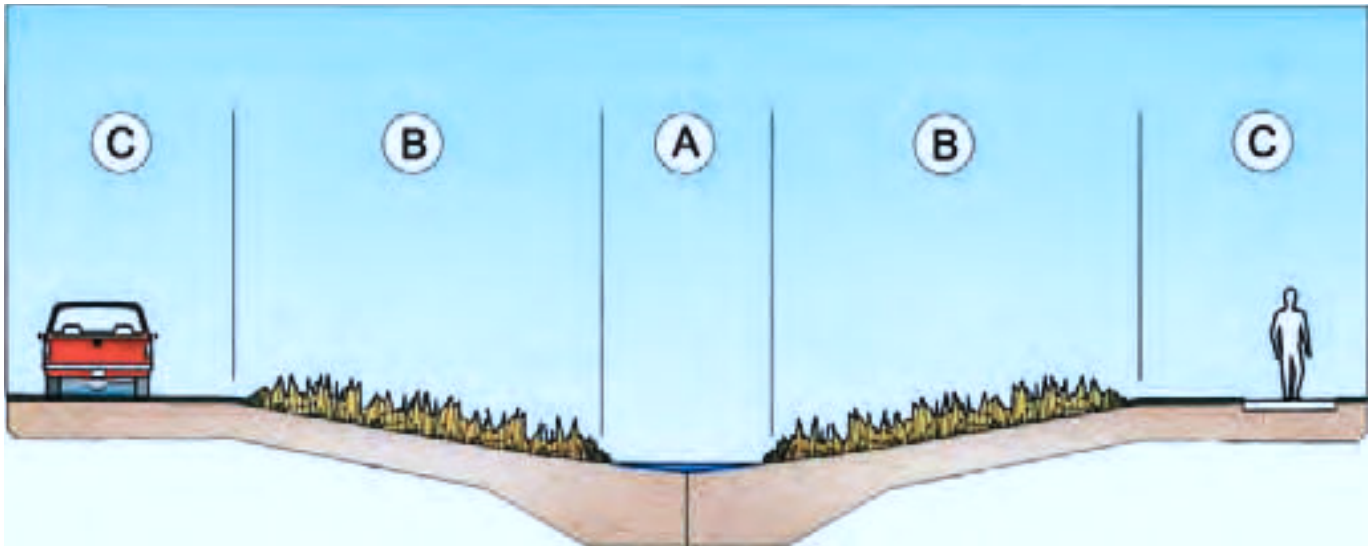


Table 4.3 **Stream Buffer Protection Guidelines - Undefined Streams (category C and D)**

		A Flow Section	B Transitional Section	C Access Path
Purpose		Bottom of swale or creek expected to be seasonally or constantly wet. Bottom edges (toes) of defined streambanks included.	Buffer width necessary to maintain or repair slopes to a stable grade of 3:1 or flatter (6:1 preferred). Safely convey minor storms and smaller flood events.	To provide rights for access and a clear path for maintenance equipment to reach the stream corridor to evaluate its condition, remove brush and debris as necessary and address erosion issues as they occur. Safely convey larger flood events.
Conveyance Requirement		This section should convey the peak rate of flow from a 1-year, 24-hour storm event.	The peak rate of flow from a 25-year, 24-hour storm event should be contained within this section.	The peak rate of flow from a 500-year*, 24-hour storm event should be contained within this section.
Vegetation		Wet tolerant, deep-rooted native grasses and sedges. Portions of streambed may be free of vegetation.	Erosion resistant native grasses and forbs tolerant of a variety of moisture conditions. Growth of trees and brush should be controlled to allow adequate sunlight to reach surface.	Maintain a clean edge against transitional section. Promote shorter varieties of native grasses or turf lawn applications along access paths and trails. Taller native varieties should be kept at least 10′ off the edge of paved trails.
Stream Type	**Access and Ownership**	**Minimum Width for Each Section**		
A	Paved trail (one side), clear grass path (other side) City Owned	At least 10′ wide, but wider as needed to meet conveyance requirements.	No less than 20′ each side, but wider as needed meet conveyance requirement.	Provide at least a 20′ clear path (both sides) and meet conveyance requirement.
B	Optional paved trail (one side), clear grass path(other side) City / HOA owned	At least 6′ wide, but wider as needed to meet conveyance requirements.	No less than 10′ each side, but wider as needed meet conveyance requirement.	Provide at least a 15′ clear path (both sides) and meet conveyance requirement.

*For Category D Streams, flows from events larger than a 100-year storm may be conveyed within private easement

native grasses and flowers that can be more routinely maintained to provide a more attractive edge to the buffer.

- An access path (15-20 feet wide on both sides of the stream) for ongoing maintenance. One side could be a lawn or short native grass mix that could be mowed on a weekly or monthly basis. The other could be a paved recreational trail.

Width of the various sections may need to be adjusted to assure that the peak runoff rate from the 500-year design storm is contained within the buffer corridor.

Low head stream crossings or other points of access may be required to allow for maintenance vehicles to easily cross from one side of the stream to the other. Riffle dams or other forms of grade control may be necessary in developing areas to prevent downcutting along steeper grades of stream.

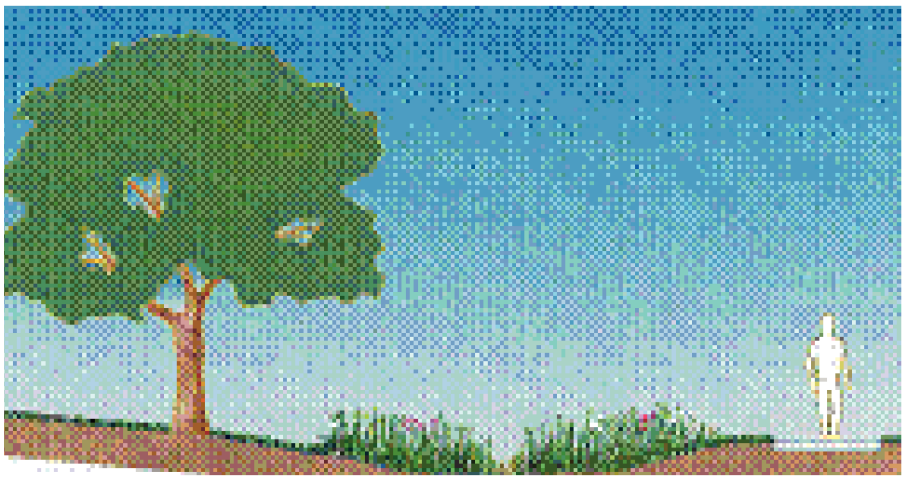
Category C Streams have a large enough watershed that it is preferred that the required buffer should be conveyed to City ownership as parkland or bluebelt.

Category D Streams have smaller watersheds and the buffer required may be retained by a private homeowner's association or other private entity, but ownership divided among several individual single-family parcels should be discouraged.

Small swales and drainageways (Category E) may have narrow buffers designed to convey rainwater from a smaller watershed area in a non-erosive manner. They should be established with erosion resistant deep rooted plants and flowers, with a width to allow for proper conveyance of the 25- year storm event with provisions for an included 20 foot strip on one side for maintenance access. Where located outside of publicly owned lands, easements should be established to protect the entire width of the buffer, including development restrictions within areas affected by a 500-year flood event.

Areas of common property drainage need easements to reserve a proper flow path for surface drainage, which should be of sufficient width to convey a 500-year storm. This path should be clear of utility boxes and other structures and may require subsurface drainage provisions in certain areas to reduce ponding in certain areas.

The Center for Watershed Protection's Urban Watershed Restoration Manual and the Iowa Department of Natural Resourc-



STREAM BUFFER PROTECTION

- The stream buffer guidelines contained within this section are intended to be a foundation for performance standards that could be developed to determine the width of conservation buffers needing to be protected.
- The width of each buffer will vary with each stream corridor, as needed to meet the goals listed for each flow section of a given category of stream.
- The intent of these guidelines is to protect future and existing development from the risk of flooding damage due to excessive erosion.
- Following these guidelines should mitigate the increases in flow rates or velocities that can occur as watersheds become more developed or as flows though stream corridors are funneled through steeper or narrower flow sections.

a. Cut branches, rock piles and habitat boulders at Precedence Lake at Prairie Trail;
b. Native flowers and turf grasses near a pond along NW State Street;
c. Safety shelf graded into edge of Promenade Lake at Prairie Trail;
d. Earth paths, recreational trails and adjacent public streets provide access for use and maintenance at Precedence Lake.

es' report titled How to Control Streambank Erosion are recommended sources for more detailed design information.

WATER FEATURES THAT ALSO PROVIDE REGIONAL RAINWATER MANAGEMENT

Management of larger rainfall events will occur in facilities that may be several acres in surface area. These facilities can be developed into lakes, ponds, naturalized areas and constructed wetlands to provide effective methods of rainwater detention inside an aesthetic landscape water feature within the park system. These features should include the following:

Forebays or other pretreatment to collect sediments, trash and other pollutants at accessible locations before they can be washed into the larger facility.

Surface and subsurface habitat improvements to promote a more diverse array of fish and other wildlife that can act as predators to invasive and nuisance species.

A mix of natural and formal landscapes providing the habitat diversity and erosion protection of tallgrass prairies and wetlands, but allowing for more active recreation and access to the water in desirable locations.

An aquatic safety bench around all deep water areas to support shallow water shoreline vegetation and to prevent park users from falling into deep water from the edge.

Public visibility and access to encourage use of the facility and allow for ongoing maintenance and operation.

The Iowa Stormwater Management Manual's sections on Storm Water Detention and Wetland design are recommended for more detailed information on each of these features.

GUIDELINES FOR RAINWATER MANAGEMENT IN DEVELOPING AND REDEVELOPING AREAS

The current comprehensive plan has evolved to include preservation of quality open spaces and stream courses as a key principle. These open spaces can be used to provide storm water detention, especially for the largest, yet extremely rare storm events that require the most volume and area. However; local flooding, water quality impairment and streambank erosion can become large issues if no rainwater management is provided upstream of regional rainwater management areas.

Therefore, it is necessary to provide rainwater management through the combined efforts of site level development practices and larger scale practices that are likely to be constructed by the City as public improvement projects and integrated into the Bluebelt network developed for the protection of wetlands, streams and buffers and weaved within a system of parks, trails and stormwater assets.

Site Level – development scale practices.

These practices will usually be included as part of plans for an individual development (ranging in size from less than an acre to as much as 80 acres). Such practices should be located with proper provisions for ongoing access and maintenance (avoid individual single-family ownership of such practices that are proposed to meet development scale management requirements). The goal of these practices will be as follows:

Address water quality treatment requirements to intercept pollutants typical for the proposed land use. This means as part of site development, practices will be installed that capture and treat runoff from a 1.25", 24-hour storm event (Water Quality Volume). Approximately 95% of the rainfall events in Central Iowa are of this depth or less, and almost 80% of the annual rainfall volume is generated by storms in this category. By effective management of these storms (and the "first flush" of larger events), many of the pollutants of concerned will

be removed from rainfall runoff before it can leave the site area. Where possible, smaller distributed practices located closer to the runoff source are preferred over larger scale practices employed at a pipe outfall or other system outlet. This leads to the development of a chain of practices to treat runoff, where if one link is less effective there are others in line to provide additional treatment. Such practices should only be located where accessible for ongoing maintenance.

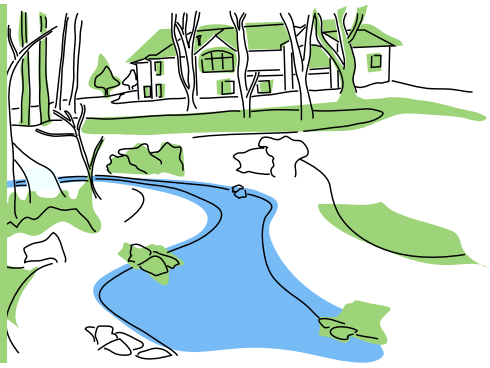
Protect downstream receiving waters from further habitat loss, channel erosion and streambank degradation. As part of site development, practices will be implemented that allow for extended detention of the Channel Protection Volume (generated by a 1-year, 24-hour event of 2.38"). This means capturing the runoff volume from a storm of this nature, and slowly releasing it over a period of no less than 24-hours. This reduces the rapid "bounce" effect common in many urban streams that leads to a large portion of rapid downcutting and streambank erosion.

Provide on-site rainwater detention to limit runoff peak flow rates from minor storms (more frequent than a 25-year recurrence interval) to pre-settlement rates (meadow in good condition). At the site development level, provide rainwater detention practices with multi-stage outlets that control the outflow from these events to pre-settlement levels (meadow in good condition). This is intended to prevent the surcharge of downstream culverts and storm sewers and allow for the safe conveyance of these events from the site area. This will also reduce the possibility of overbank flooding from these minor storms. Larger detention basins should be located in a common open space area, outlot or other area where ongoing maintenance and cleanout can be provided. Avoid designing storm water detention in areas to be

a.b.c. Site Level Development Scale Practices;

SITE LEVEL MANAGEMENT

- These guidelines shift the focus of site level stormwater management to creating Best Management Practices (BMPs) that address the effects of "small storms". Such features will provide water quality treatment and reduce the rapid bounce of stream elevations that is a common cause of small stream scour and erosion.
- Refer to Section 2C-6 of the Iowa Stormwater Management Manual for additional guidance.



SITE LEVEL MANAGEMENT

- In watersheds where regional management is proposed within "Bluebelt" areas, the focus of minor and large storm management should be to prevent the frequent surcharge of downstream storm sewer systems and safely pass flows from very large storms to the regional system for additional flood control.
- In areas where no regional system is planned, or is likely to be installed many years after a proposed development, the City may require additional storage to provide flood storage for major storm events (up to the 100-year event) within a given development.

Table 4.4: **Site Level Requirements**

Storm Event (24-hr, Type II rainfall distribution)	Site Level Requirements
Water Quality Event (1.25")	Apply site appropriate BMPs to capture and treat runoff from all rainfall events of this size or smaller.
Channel Protection Event (1-year; 2.38")	Provide Extended Detention (ED) to capture runoff from this event, and release slowly over 24-48 hours.
Overbank Flood Protection (>1-yr. to 25-year)	Provide detention storage to limit peak discharge rates to those similar to pre-settlement hydrology (meadow in good condition, extended Tc).
Extreme Flood Protection (>25-yr. to 100-year)	Developed flows are allowed to be released provided that a safe path of conveyance is available to a planned or constructed regional detention facility. Lacking a safe path or regional rainwater management planned downstream, additional detention may be required.

Refer to the Iowa Stormwater Management Manual for more information

retained as part of single-family residential lots.

For larger storm events (25-year to 100-year recurrence intervals), provide a safe path of conveyance from the outlet point of the site to the location of a regional rainwater management area. To protect private and public improvements from flood damage, a clear path must be established that is capable of safely conveying larger storms from the site area to a planned or constructed regional rainwater facility, likely to be located within a proposed city park or greenbelt. If no safe path exists, additional detention may be required as needed to prevent potential flood damage.

Bluebelt Regional Level – larger scale practices located in city owned parks or greenbelts.

These practices will usually be included as part of plans for overall watershed management, meeting the flood control needs for multiple development properties. The goal of these practices will be as follows:

Provide additional water quality improvements. Incorporate additional practices that focus on additional pretreatment and protection for constructed water features and amenities. These will provide additional water quality enhancements above and beyond the Water Quality Volume requirements that should be met at the site development level.

Provide safe and stable conveyance of rainwater runoff from the site outlets to the regional facility. Site level practices should reduce the possibility of erosion and streambank degradation, but proper design and maintenance is needed to keep flow velocities low while conveying both small and large storm events.

For larger storm events (25-year to 100-year recurrence intervals), regional facilities shall provide temporary storage for larger storm events. Peak flow rates after full development of the watershed shall be limited to pre-settlement levels (meadow in good condition) for these events. This is intended to protect downstream areas and larger receiving streams from flooding during these rare, but large storm events. Release rates for these storms shall also be limited so that they don't exceed the runoff rate from pre-development conditions (primarily agriculture) during a 5-year rainfall event.

Use collected rainwater as a resource to develop aesthetic enhancements and amenities. Constructed wetlands, lakes and other features can provide many opportunities for recreation, adding value to the local neighborhoods.

Table 4.5: **Regional Level Requirements**

Storm Event (24-hr, Type II rainfall distribution)	Regional Level Requirements
Water Quality Event (1.25″)	Requirements met at site level. Provide additional treatment measures such as enhanced swales, streams and wetlands as appropriate.
Channel Protection Event (1-year; 2.38″)	Requirements met at site level.
Overbank Flood Protection (>1-yr. to 25-year)	Provide detention storage to limit peak discharge rates to those similar to pre-settlement hydrology (meadow in good condition, extended Tc).
Extreme Flood Protection (>25-yr. to 100-year)	Provide detention storage to limit peak discharge rates to those similar to pre-settlement hydrology (meadow in good condition, extended Tc); or to similar to levels from agricultural uses from a 5-year, 24-hr. rainfall event.

Refer to the Iowa Stormwater Management Manual for more information

Provide a means of access for maintenance and operation. Constructed trails and buffer easements can provide a means to provide routine maintenance and upkeep near rainwater management areas. By locating larger site level practices adjacent to the open space network, better access may be available for privately maintained facilities as well.

IMPLEMENTATION RECOMMENDATIONS

Many of the methods of dealing with rainwater and environmental issues discussed in this chapter represent significant changes from past policies and design guidelines. To fully implement these concepts, the following action items are recommended.

Continue to fulfill requirements of the City's MS-4 permit. In compliance with state law, the City has obtained a permit to cover operation of its municipal separate storm sewer system (MS-4). This permit has annual reporting requirements and is renewed every five years. Local requirements are likely to change every renewal period based on new federal and state laws.

Implement use of the Iowa Stormwater Management Manual as requirements for design calculations. This manual addresses the design of management practices to manage both small and large rainfall events.

Develop technical guidance documents to assist in plan review. Many of these

REGIONAL MANAGEMENT

- Selected BMPs within the Bluebelt system will provide additional water quality treatment; develop systems that are resistant to bank or channel erosion; and provide flood storage detention for major flood events.
- Trails and maintenance paths should be provided for ongoing maintenance and recreational use of the Bluebelt network.
- Based on recommendations within the Iowa Stormwater Management Manual, use of computer models that perform stage storage routing (such as TR-20/55) are recommended in design of flood storage facilities.

a. Rock Creek; b.Recreational Trail in Ankeny; c. Bike Trail in Ankeny; d. Prairie Ridge Bridge in Ankeny;

new design practices are new to local consultants and assumptions used in stormwater design often vary widely from site to site. A review checklist and set of guidance would aid in City site review and establish basic guidelines for design assumptions to be used by all.

Review existing ordinances for items that conflict with concepts discussed in this chapter. Policies that govern site development, parking requirements, weed control and other items can often run contrary to better site design and rainwater management practices.

As financially viable, correct identified major storm water related issues. Use grants, loans and storm water utility fees to address these issues before they worsen.

Create new ordinances as necessary. To codify the guidelines within this chapter it may be necessary to create ordinances that govern stream buffers and sensitive areas.

In developing areas, reserve the anticipated 500-year flood plain as open space along significant stream corridors. This area can be developed into the City's Bluebelt network, giving rainwater its own dedicated space where it can be managed effectively and reduce the potential to negative impacts to public and private property. Along streams with watersheds of under 300 acres (some category B and D), the area between the 100- and 500-year flood limits may be reserved within private easement rather than within the separate parcel that delineates the bluebelt corridor.

Manage the growth of trees and brush along major stream corridors. High quality trees are assets, but uncontrolled growth of trees and brush can limit sunlight to the surface, causing more erosion resistant ground cover to be lost. A program of seasonal mowing or burning can limit the growth of undesired species in these areas. Selective clearing may be necessary in certain areas where trees and brush have been allowed to become too dense.

Develop a routine maintenance program for City rainwater management facilities. If constructed best management practices (BMPs) to control water quality and quantity are effective, they will capture sediments and other pollutants that will need to be removed at certain intervals. Each developed practice should have a typical maintenance schedule where they are inspected for proper performance and captured sediments and other items are removed and disposed of safely.

Study individual Bluebelt corridors to develop a more detailed concept plan for each. When development is set to expand into a new part of a Bluebelt watershed, that corridor should be studied in more detail to better define the size and location of management facilities, the types of practices to be constructed and the amount of land that will need to be reserved to follow the performance guidelines for the corridor as outlined in this chapter.

Work towards acquiring land and constructing Bluebelt improvements. To mitigate the effects of runoff from developing areas, planned regional improvements should be installed either ahead of local development, or as soon as possible thereafter to reduce the need to require all large storm flood storage to be provided on-site within privately developed areas.

RECOMMENDATIONS

- Fulfill ongoing MS-4 requirements.
- Implement use of the Iowa Stormwater Management Manual.
- Review and amend existing ordinances
- Correct identified existing major stormwater issues.
- Reserve the 500 year floodplain along major streams.
- Routinely clear and maintain wooded stream corridors.
- Develop a maintenance routine for City rainwater facilities.
- Study and implement selected Bluebelt rainwater BMPs in growth areas.

5

FUTURE LAND USE

This chapter identifies areas for future growth in the City, taking into account the surrounding land use and the existing demand. The chapter also establishes development policies that will guide the city's future land use decisions.

DEVELOPMENT PRINCIPLES

As detailed in Chapter 3, in 2008 Ankeny adopted a Mission Statement and identified a series of Guiding Principles to steer the community towards achieving the stated 2022 vision. In addition, the 2004 Comprehensive Plan identified Community Goals and Smart Growth Principles, also to guide development. The purpose of this section is to identify design principles that will guide future development toward achieving the adopted vision and goals. The future land use plan was developed incorporating these development principles.

STORMWATER MANAGEMENT PLAN

Chapter 4, Environmental and Stormwater Considerations, identified key environmental resources and constraints that impact Ankeny growth. Chapter 4 also presents a detailed plan for stormwater management in Ankeny's growth areas. The guiding principle underlying the stormwater master plan is the accommodation of natures' natural pattern of drainage. The master plan recommends areas for conservation to accommodate stormwater flowage in the growth areas without negatively impacting the development and downstream properties. This stormwater master plan is the base for development of the Future Land Use Plan, with the stormwater master plan drainage conservation areas, defined as "bluebelts" in Chapter 4, shown as undeveloped open space.

ANKENY'S REGIONAL ROLE AS A "COMPLETE" COMMUNITY

While much of this chapter focuses on residential growth and land use, it is important at the start to recognize Ankeny's historical development into a "complete" community, encompassing a growing employment base with a strong industrial sector and both regional and local commercial services, in addition to one of the strongest residential markets in the metropolitan region. It is understood that this status as a complete community, as contrasted with a "bedroom" community, is the foundation of Ankeny's attraction and the basis for the community's strong growth in recent years. This Future Land Use Plan seeks to continue, reinforce and extend Ankeny's broad, complete land use base.

NEIGHBORHOOD MODEL

Ankeny planning staff has long viewed the "neighborhood unit" as the desirable pattern for development in new growth areas, as contrasted with a piecemeal development pattern resulting from disconnected, individual residential subdivisions and commercial developments. This neighborhood unit approach was formalized in the 2004 Comprehensive Plan and the concept was used to describe new growth areas' future land use. A square-mile generalized "neighborhood model" land use pattern was adopted as the Future Land Use Map where growth was expected to occur, and the plan text described the general components of the neighborhood model.

These general Neighborhood Model components remain the same and are detailed below. However, as documented in Chapter 4, this Comprehensive Plan Update incorporates a detailed watershed analysis to identify natural areas for protection and preservation. While the details regarding the incorporation of the stormwater management plan into the future land use plan are described later in this Chapter, we first identify the Neighborhood Model and other design principles that will guide development in Ankeny.

More and more communities are adopting the Neighborhood Model as the guide for quality development in growth areas. The Neighborhood Model is typically characterized by the following:

Centers: Neighborhoods will have centers or focal points for congregating. These may include schools, parks, and places of worship, civic centers, or small commercial and social areas. Such features will be an easy walk for most residents in the neighborhood.

Open Space: Each development area will offer opportunities for public and private outdoor recreational areas for active and passive recreation. Open space and natural area preservation will be integral to the neighborhood design and closely tied to the watershed-based storm water management plan recommendations. Development should adapt to site terrain so that natural topography can be preserved.

NEIGHBORHOOD MODEL CHARACTERISTICS

- Neighborhood Center
- Open Space
- Transportation Options/Street Network
- Mixed Uses
- Building Placement and Scale
- Relegated Parking
- Variety of Housing Types
- Appealing Streetscapes

Transportation Options/Network: A network of streets, bikeways, pedestrian paths, and bus routes will connect new neighborhoods as well as existing residential areas and non-residential districts. Convenient routes for bicyclists and pedestrians will augment the street network. Walking to future public transit stops will be safe and convenient.

Mixed Uses: Neighborhoods will contain a true mix of uses, including residences, shops, and places of employment, as well as civic, religious and cultural institutions.

Building Placement and Scale: Consideration will be given to massing, height, setbacks, and orientation of buildings so that these characteristics enhance the public realm. Buildings and spaces will be kept to a human scale so that street views are attractive and pedestrian-friendly.

Relegated Parking: Automobile parking will not result in an excessive amount of paved area; parking on the street will be the norm, and parking lots will be provided to the rear and/or sides of the building.

Variety of Housing Types: Each neighborhood will possess a variety of housing types accommodating a range of incomes. A full range of housing choices should be offered within each neighborhood.

Appealing Streetscape: As the fundamental element of public space within the neighborhood, the street will make the neighborhood inviting with street trees and landscaping. Sidewalks or paths that connect houses to each other and to centers and common areas will be the norm. Walks will connect sidewalks to front doors and main entrances.

Figure 5.1: **Neighborhood Unit, 2004 Ankeny Comp Plan**

The Neighborhood Model seeks to change the pattern of development from one of sprawling, isolated residential subdivisions and disconnected multi-family and commercial "pods" to an integrated, connected and more compact design. In the 2004 Comprehensive Plan, a square-mile Neighborhood Unit was described as indicated on Figure 5.1.

This model assumes that, in general, the neighborhood "center" would consist of a school, park and open space that might total about 35 acres. A neighborhood commercial district might total another 5 to 10 acreas, leaving approximately 600 acres for residential development. This residential development would consist of a combination of low-density, medium density and mixed-use development. While specific allocations of acreages were intended to be very general estimates, the important concept was an interconnected development pattern that meets the above-listed characteristics of the Neighborhood Model.

Ankeny's overall housing stock, as well as the past ten years' residential construction, reflects a similar mix of housing. Approximately 65% of new residential units have been single-family detached, 10% have been single-family attached, and 25% have been multi-family. Historically, on average, three single-family detached units require one acre of land, eight single-family attached units require an acre and the average gross density of multi-family development is 15 units to an acre. Thus, if 600 acres in a section of land were developed as residential, that section can accommodate a total of about 2,500 dwelling units. Approximately 1,600 of these units will be single-family detached, 250 will be single-family attached, and 650 will be multi-family to achieve the 65/10/25 unit mix. In terms of land area, 530 acres of the neighborhood will be devoted to single-family detached development, 30 acres to single-family attached,

a. N. Ankeny Blvd; b.Residential; c. Church; d. Firestation Headquarters

and 40 acres for multi-family. Table 5.1 displays these figures.

Two aspects of this 2004 neighborhood unit analysis need to be highlighted. First, the above analysis, with 600 acres available for development, is unrealistic because the typical square mile of land will have undevelopable drainageways and other natural features that remove developable land. Thus, the above example overstates the typical square-mile density and is presented only for illustrative purposes.

Second, the 65%/10%/25% residential density mix is likely to change over time, as will the density (units/acre) of each category. These densities are likely to increase within the 25-year time frame of this comprehensive plan update. Des Moines metro has seen the beginning of this trend with the rise in popularity of the townhome and bi-attached dwelling units in the 1990's. While this trend was slowed by low interest rates and "easy money" of the single-family residential boom, the return to more conservative lending practices is likely to correlate with long-term, slow acceptance of somewhat higher densities in the market. While the multi-family 25% of the housing stock is likely to remain relatively constant, it is anticipated that the single-family detached 65% will decrease as the single-family attached 10% increases. This issue will be returned to later in this chapter as the proposed new Future Land Use Map is presented and discussed.

Irrespective of the unit type mix, the 2004 Plan indicated that in the Neighborhood Model medium-density residential development should be focused along arterial streets (typically section line streets), while higher-density, or multi-family residential development should be concentrated at the intersections of arterial streets along with neighborhood commercial and office uses. Areas of predominantly single-family residential development should occur toward the center of the neighborhood. These neighborhood model land use relationships from the 2004 Comprehensive Plan are expanded upon below with new insights into the neighborhood model theory.

A further elaboration of the "Square-mile Neighborhood Unit" used in the 2004 Future Land Use Plan is provided by Andres Duany in "Lexicon of the New Urbanism" and is illustrated in Figure 5.2. This model conforms to the New Urbanist's standard ¼ mile walking distance definition of a neighborhood, which is considered ideal. It is referenced here because it reconciles the Traditional Neighborhood Development (TND)quarter-mile radius size with the typical square-mile land unit and shows how the typical arterial intersection commercial node development relates to a neighborhood model development pattern. It also shows a generic cross-sectional "greenway" which can, in Ankeny's future land use planning, represent a stormwater masterplan conservation drainageway.

Figure 5.3 depicts Duany's further elaboration of a quadrant (lower-left quarter-section) of the square-mile neighborhood model above. This graphic is used by Duany to illustrate several neighborhood model design principles, which are highlighted on the graphic. The most important design principles for Ankeny are:

Table 5.1 Residential Use Distribution

	% units	units/acre	# units	# acres
Single-Family Detached	65%	3	1600	530
Single-Family Attached	10%	8	250	30
Multi-Family	25%	15	650	40
Total	**100%**	-	**2,500**	**600**

Source: Ankeny 2004 Comprehensive Plan

Figure 5.2: Andres Duany "Square-mile Neighborhood Unit"

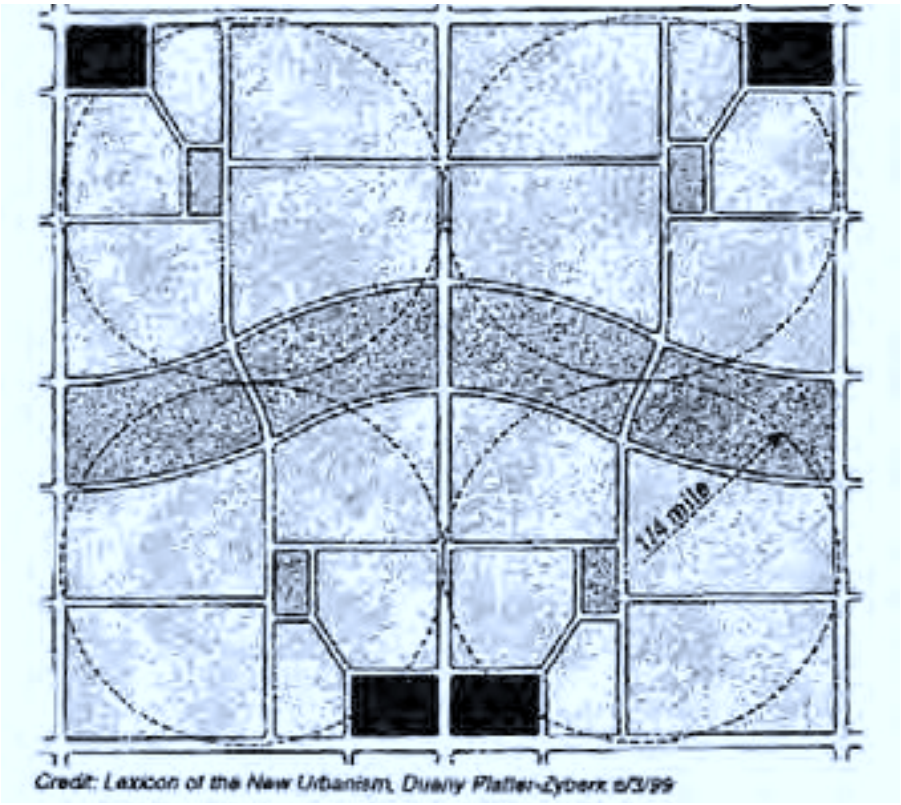
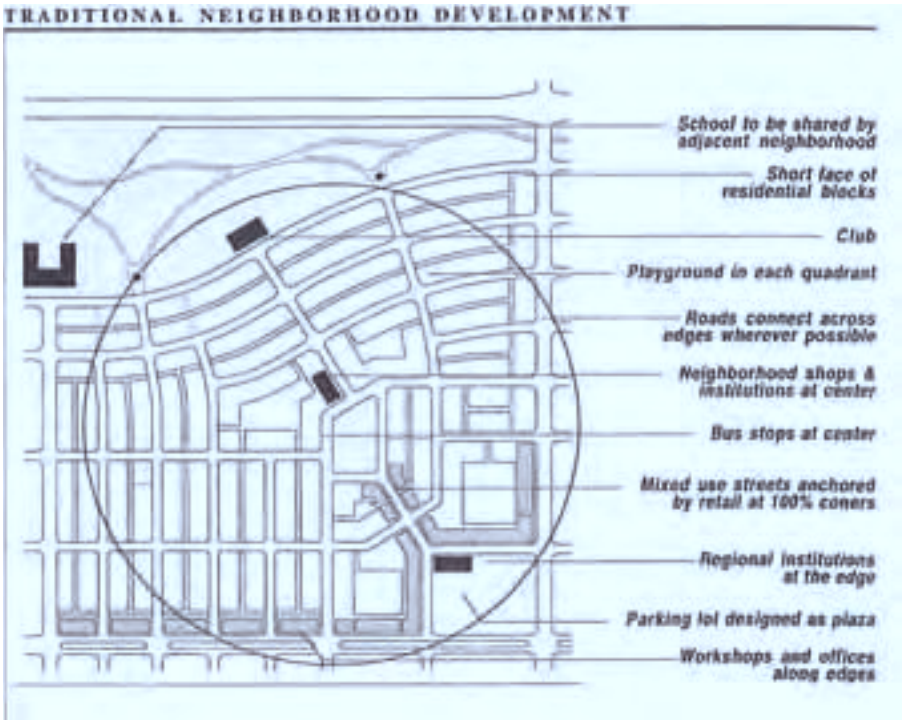


Figure 5.3: Andres Duany Quarter Section Traditional Neighborhood Development



- "The school is not at the center but at an edge, as the playing fields would hinder pedestrian access to the center. The school at the edge can be shared by several neighborhoods…"
- "The shops at the busiest intersections have been modified to accommodate larger parking plazas for convenience retail and extended by an attached main street for destination and live-work retail."
- "The minor thoroughfares are connected with those outside the neighborhood in order to increase permeability and disperse traffic."

Appropriate neighborhood model design principles are further illustrated by Figure 5.4, again from The Lexicon of the New Urbanism, Duany Plater-Zyberk & Company. This diagram breaks the quarter-section traditional neighborhood development model down into component sectors and is used to identify both appropriate land uses and development standards for each zone.

Neighborhood zones are defined as Edge Zones, General Zones, Center Zones and Core Zones. The design principles described by Duany for each zone address the transitioning of land uses in the neighborhood model and are appropriate for Ankeny to consider when reviewing specific development proposals in designated growth areas. Highlights of recommendations for each of these neighborhood zones are:

Edge Zones

- The least dense, most purely residential sector of the neighborhood.
- Land use is restricted, combining residential with certain other uses only within the outbuilding.
- Buildings are low-density freestanding.
- Frontages weakly define the public space with deep setbacks.
- Open space may be parks within the proximate greenbelt.

General Zones

- Sector is mixed in function, but principally residential.
- Land use is limited, permitting the controlled combination of residential with other uses.
- Buildings are medium-density freestanding.
- Frontages are variegated with medium setbacks.
- Open space is organized as parks and greens.

Center Zones

- The dense multifunctional social condenser of a neighborhood. It is usually at a central location, within walking distance of the surrounding, primarily residential area.

- Land use is open, encouraging the combination of residential and other uses.
- Buildings are higher-density attached.
- Frontages define continuous streetwalls with shallow setbacks.
- Open space is organized as plazas or squares.

Core Zones

- The most dense, service and institutional center. It is usually shared by several neighborhoods. It always straddles thoroughfares at their most active intersection.
- Land use is open, encouraging the combination of residential and other uses. There is usually a mandatory retail frontage.
- Buildings only high-density attached.
- Frontages define continuous streetwalls with shallow setbacks.
- Open space is organized as plazas or squares.

While these design principles deal with a theoretical traditional neighborhood development model, they were applied through the Plan charrette process to the Ankeny future growth areas land use concepts. These concepts also incorporated the stormwater master plan recommendations for conservation of major drainageways. The resulting Future Land Use Plan, described below, represents an application of the neighborhood model to the stormwater master plan conservation drainageways base.

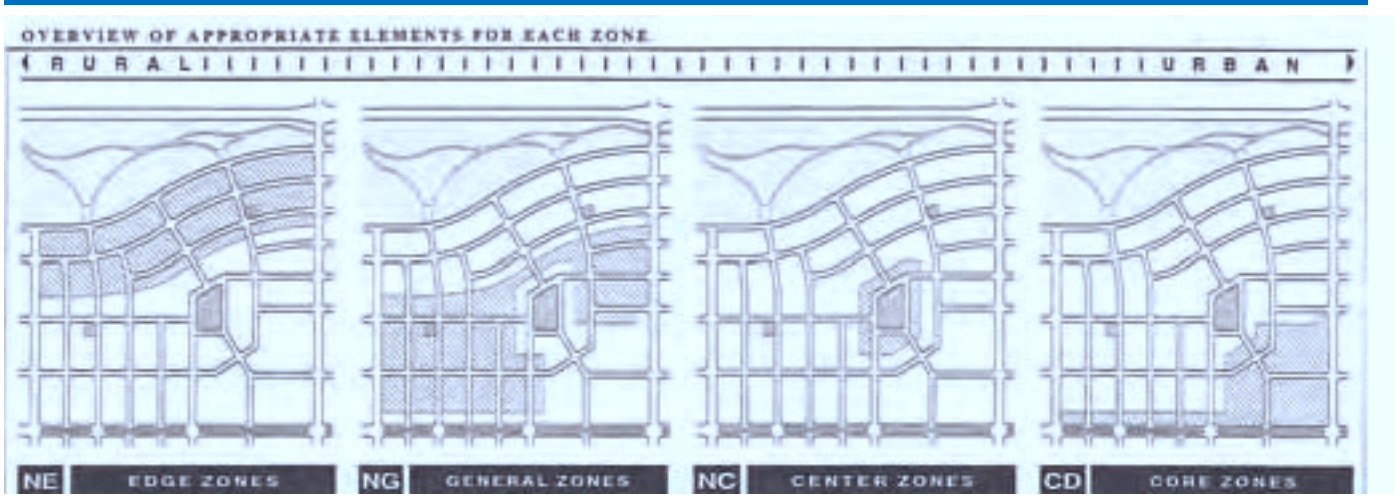
By understanding the design principles that underlie the neighborhood model, Ankeny decision-makers will be able to review actual development proposals for consistency with the generalized Future Land use Plan in a way that maintains flexibility while at the same time retains the key characteristics and advantages of the neighborhood model.

ADDITIONAL DESIGN PRINCIPLES

Additional design principles underlying the planning framework from which the Future Land Use Plan was developed, along with reference to the Plan Update section where they are discussed, include:

- **Context-Sensitive Street Design:** Chapter 7, Transportation
- **Complete Streets:** Chapter 7, Transportation
- **Green Streets:** Chapter 7, Transportation
- **Active Living:** Chapter 6, Parks and Trails
- **Bicycle and Pedestrian Planning:** Chapter 6, Parks and Trails

Figure 5.4: **Andres Duany "Neighborhood Zones"**



COMMUNITY GROWTH AND LAND USE

DESIGN WORKSHOP

A three-day design workshop was held in Ankeny to produce the Future Land Use Plan, a key element of the Comprehensive Plan Update. The workshop involved informal interaction and more formalized meetings with staff, municipal officials, steering committee members and residents. The purpose of the workshop was to develop a future land use plan for identified future growth areas. Future development in Ankeny must align with the city's goal for a sustainable, quality urban environment. The process of developing this plan was open, inclusive, issue-focused and well-publicized.

During the process, land use planners applied the neighborhood model design principles to the growth areas while protecting the green corridors designated for conservation (bluebelts) in the environmental analysis. Including drainage corridor preservation as an integral part of the development concept was a very challenging process. Watershed boundaries, surface water areas, stream corridors, existing highways and streets, topography, tree cover and existing land uses all played significant parts in shaping the land use plans for the future growth areas.

ENVIRONMENTAL ANALYSIS AND EXISTING INFRASTRUCTURE

A strong economy with a growing employment base, public amenities, great regional access and natural setting have transformed Ankeny into one of the fastest growing suburbs of Des Moines. Prior to the current economic recession, the city had been adding an average of more than 750 dwelling units annually for the previous decade. With such fast-paced growth, a key issue for the city is preserving its natural environment: drainageways, extensive wetlands, woodlands and natural prairies.

Growth in general is desirable for communities as it provides new jobs, increased income, broader tax base, and enhancement of parks, libraries and other public amenities. However, growth is also accompanied by costs such as increased expenditures for public services, traffic congestion, loss of open space and consumption of important natural resources. Unplanned growth fragments the natural system and destroys its economic potential as a community amenity. To move toward sustainability, a community must plan for its future growth considering the opportunities, constraints and impacts associated with its natural features.

Considering natural resources during the comprehensive planning process creates opportunities to conserve environmentally sensitive areas while planning for quality future growth and development.

Chapter Four, Environmental and Stormwater Considerations, by Nilles Associates, highlights the need to protect and enhance the significant stream corridors, called "bluebelts" in developing areas of Ankeny. The analysis recommends that development be directed to areas suitable for growth, maintaining natural features and ecological functions, and protecting water quality. Information collected through mapping, resource inventories and studies was used by Nilles Associates to develop a drainageway map that highlights Ankeny's growth area bluebelts.

Figure 5.5 Growth Area Bluebelts depicts these areas. The variables considered in the delineation of these bluebelt areas include surface water, wetlands, steep slopes, floodplains, protected conservation areas, endangered natural areas, public and private wooded areas, forests, and historic features.

Chapter Eight, Infrastructure, summarizes key sanitary sewer, and water issues impacting Ankeny's identified growth areas.

EXISTING LAND USE ANALYSIS

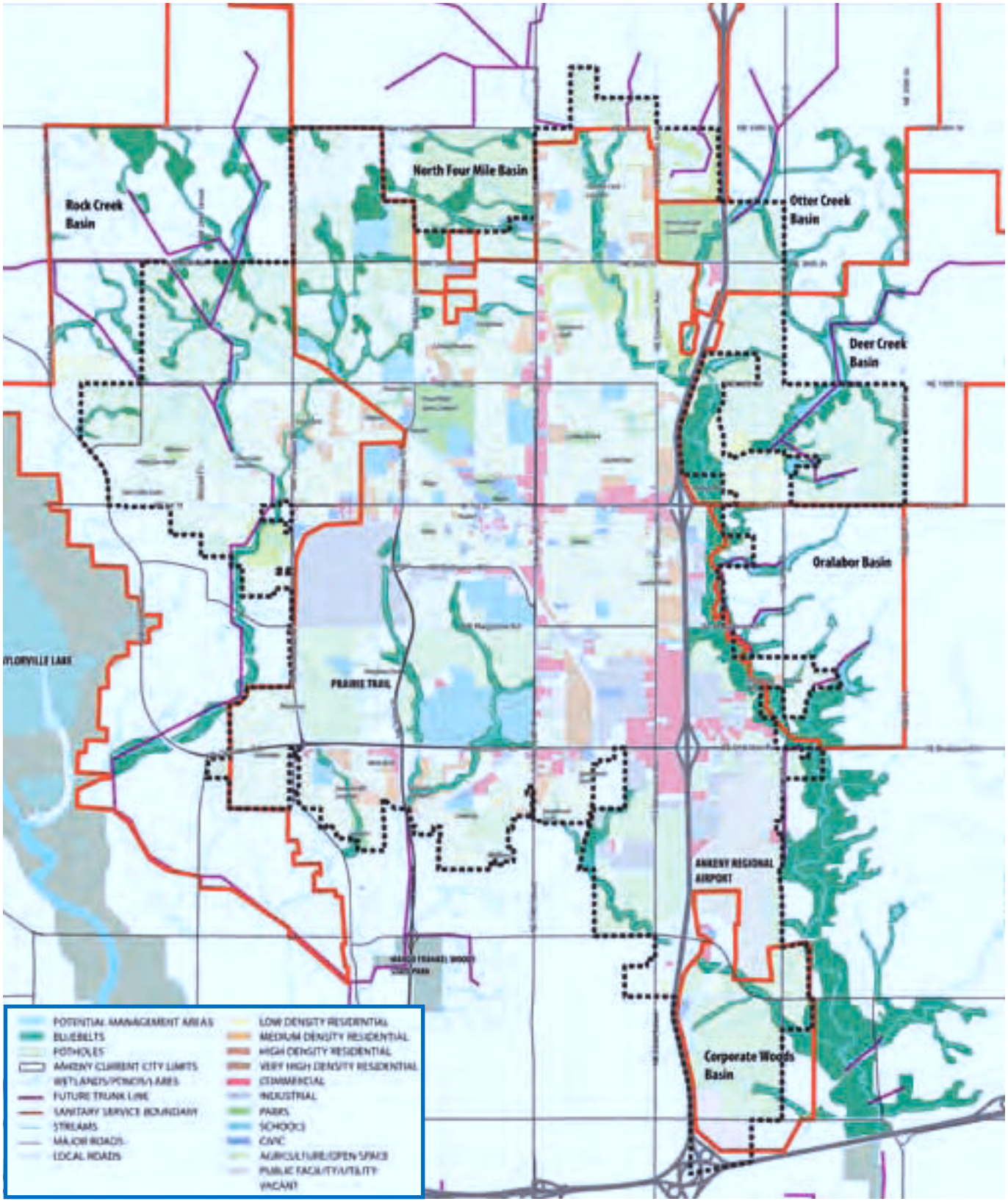
Chapter 2, Existing Land Use and Projected Growth, investigates the characteristics and potential of the various growth areas. The land development need tables display the amount of land for residential, commercial, and industrial development needed to serve the projected 2035 population of 93,000. These proposed land supplies approximate the demand to allow managed growth, while providing adequate choices of sites to developers.

Because new development involves substantial public infrastructure investment, predetermining locations for Ankeny's growth is central to the City's sustainability. Where existing land use and development patterns are stable and desirable, it is appropriate to adopt policies that conserve those areas and to extend that land use onto adjacent vacant land. Where existing land uses and development patterns are not sustainable, the plan should provide for revitalization or redevelop-

FOUNDATIONS OF ANKENY'S FUTURE LAND USE PLAN

- Environmental Analysis
- Existing Land Use Analysis
- Growth Land Needs Analysis
- Infrastructure Studies
- Transportation Concepts
- Neighborhood Model
- Design Workshop

Figure 5.5: Growth Area Bluebelts



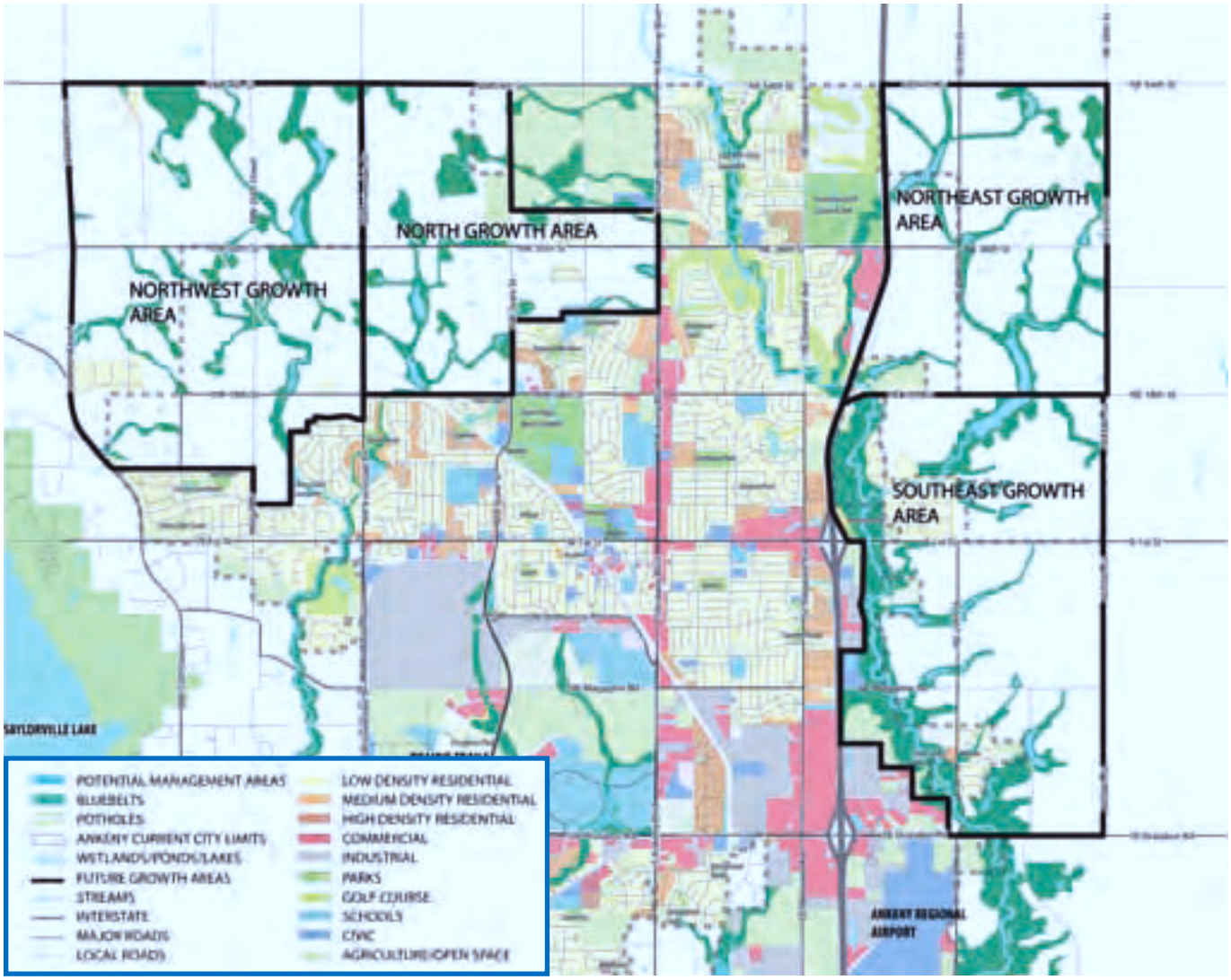
ment over time. For areas that are undeveloped and adjacent to the city limits, the plan should anticipate and guide development consistent with the public interest, physical limitations and infrastructure capacities.

LAND USE CONCEPT DEVELOPMENT

During the design workshop, the concept development focus was on promoting smart growth, implementing neighborhood model development principles and preserving designated bluebelts. Neighborhood model principles discussed in the previous section provide general guidance for future development in Ankeny. At the design workshop, these general principles were applied to land use concepts specific to Ankeny growth areas. Along with the neighborhood model and Smart Growth Principles, the existing physical and natural environment also played a strong role in shaping the future development concepts. Careful siting of land uses, preservation of bluebelt corridors and stormwater management features, and providing linkages between parks and public facilities all drove the land use concept development process. The bluebelt corridors were considered amenities around which quality development could be based.

The output of the Design Workshop was specific land development concepts for the northwest, north, northeast and southeast growth areas in Ankeny (see Figure 5.6). These initial design concepts present one detailed example of how these areas could be developed integrating the neighborhood model and the preservation drainageways into the design. These design concepts address the proposed location and distribution of land uses within each growth area. The components of individual neighborhoods include a civic heart, or center, containing a park or a school. Both Low Density and Medium Density residential development surround the civic heart. Mixed use

Figure 5.6: **Future Growth Areas**



commercial nodes and high density residential development are focused around the major intersections and along arterial streets. The density of residential development transitions from high density to single family low density toward the center of the neighborhood, as recommended in the Neighborhood Model Design Principles section above. Neighborhood or, at primary locations, community-scale commercial development nodes are located at several of the arterial intersections, surrounded by high density and medium density residential uses.

The following is a summary of the land use concept highlights of each growth area, followed by a map of the bluebelt corridors and the specific land use concept developed for that area.

Northwest Growth Area: This area on Ankeny's northwest side between Irvinedale Drive and NW 44th Street, north of W 1st Street presents opportunities for new residential growth. Figure 5.7 illustrates the bluebelt corridors and the development concept for this area. A major feature of this area is the realignment of the 36th Street and NW 44th Street intersection. This intersection can, because of its strategic location, become a possible community commercial node in the mid- to long-term. Smaller neighborhood commercial nodes are shown at major intersections like NW 18th and W 1st Street, NW 36th and NW 26th Street.

Another major feature of this growth area is the number and size of the identified bluebelts. The larger wetland areas are over 50 acres in size. This feature of the growth area removes a significant number of acres from development and will have a major impact on any proposed development plans. Major proposed land uses in this growth area include: Low and Medium Density Residential, Commercial, Parks, Schools and Green Networks. Given the preservation of designated drainageways, the land is readily developable due to lack of topographic constraints. However, additional sewage treatment capacity is needed, as well as extension of trunk lines before development of this area can take place. NW 44th Street defines the westernmost extension of Ankeny, with Polk City planned development to the west.

North Growth Area: The area on Ankeny's north side between Irvinedale Drive and Ankeny Boulevard, north of W 1st Street also presents opportunities for new residential growth and a major community commercial node. Figure 5.8 illustrates the bluebelt corridors and development concept for this area as envisioned in the Design Workshop. A major feature of this growth area is the proposed realignment of State Street north of 36th Street to swing west and align with Irvinedale at 54th St.

The proposed site of the new Ankeny High School is located in this growth area. A major community commercial node is proposed at the intersection of State and 36th Streets. Smaller neighborhood nodes at major intersections like Ankeny Blvd. and 36th Street, Irvinedale Drive and 36th Street, Irvinedale Drive and 18th Street, and Irvinedale Drive and 54th Street present opportunities for mixed use commercial development that will serve the immediate surrounding neighborhoods, consistent with the Neighborhood Model. Major proposed land uses

Figure 5.7: **Northwest Growth Area Concept**

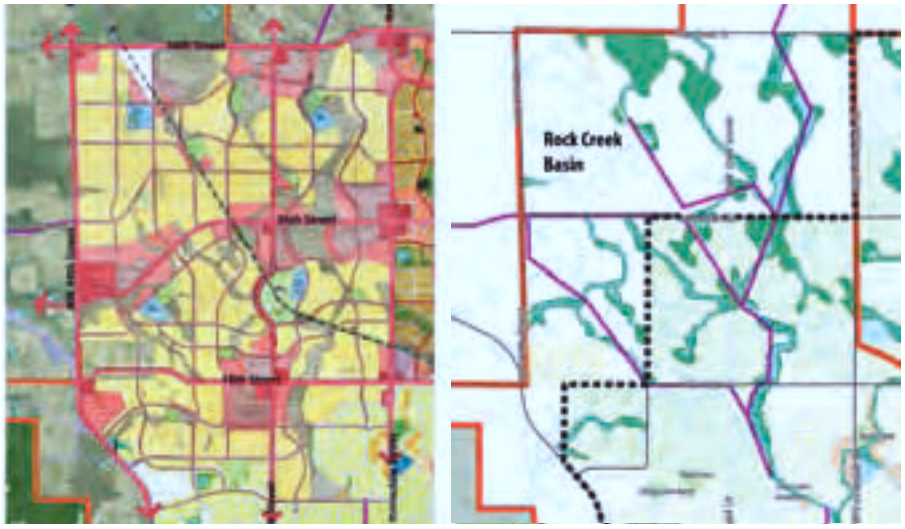
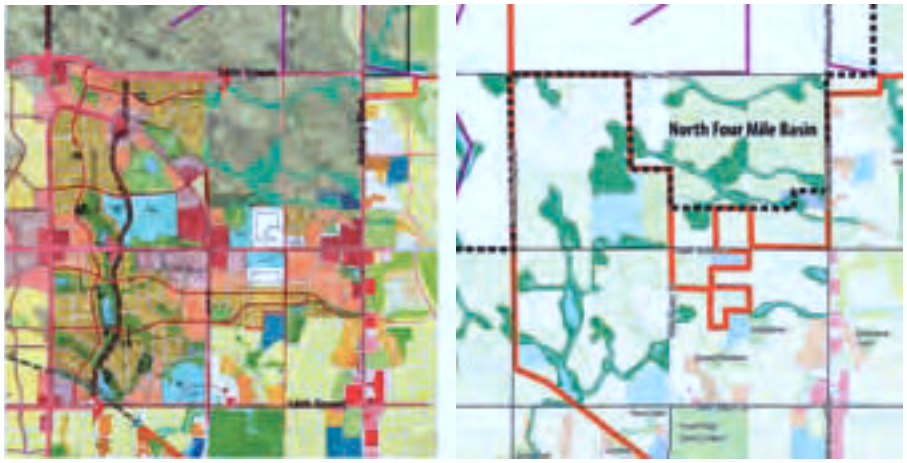


Figure 5.8: **North Growth Area Concept**



in this growth area include: Low and Medium Density Residential, Commercial, Parks, Schools and Green Networks.

As with the Northwest Growth Area, there are substantial areas designated as bluebelts. The land in the area is readily developable due to lack of topographic constraints and can be adequately served by City sewer lines. While the currently farmed area between Ankeny Blvd. and State Street (extended) south of 54th Street is excluded from the development concept, proposed streets are located such that the farmed area can be accessed and developed, should that be pursued in the future.

Northeast Growth Area: The area on Ankeny's northeast side generally between Interstate 35 and NE 38th Street, north of E 1st Street presents a major opportunity for the emergence of a new regional employment and commercial center. This area could also potentially include a dense mixed-use district and several neighborhoods about one square mile each, east of the proposed regional commercial/employment center. The land in the area is readily developable with extension of existing City sanitary sewer and water services. The proposed land uses include: Low, Medium, High and very High Density Residential, Commercial, Mixed Use, Office/Business Park, Parks, Schools and Green Networks. The development concept is illustrated in Figure 5.9.

A major employment/commercial node is proposed at the new 36th Street Interchange. A large hotel/conference center at the interchange surrounded by commercial development including travelers' services is illustrated. The hotel could have tunnel access to the Otter Creek golf course west of the interstate highway. High rise office buildings with mixed uses varying from 3 to 6 stories in height and wrapped around internalized parking decks create an urban feel suitable for a major interchange. More conventional business parks/office developments clustered in an unconventional way are integrated with high rise residential towers and other high density residential developments to provide a mixed use urban living environment for the residents.

While the area west of 29th Street is designed as a mixed use employment center environment, the area east of 29th street is oriented towards the neighborhood model principles. Each neighborhood includes a civic center which is either a School or a Park. Both medium density and low density developments surround the civic center. Neighborhood Commercial/Mixed Use nodes are focused around the arterial streets and collector street intersections. These commercial nodes will be further defined later in this chapter.

a. Tones Spices ; b. Hotel in Metro North Business Park Area;

Figure 5.9: **Northeast Growth Area Concept**

ANKENY FUTURE GROWTH AREAS

- Northwest Growth Area
- North Growth Area
- Northeast Growth Area
- Southeast Growth Area

a. Delaware Avenue; b.Summerbrook Park; c. Ankeny Regional Airport; d. Single Family Residential;

Southeast Growth Area: A Southeast growth scenario channels new neighborhoods into the area between Interstate 35 and NE 38th Street, south of East 1st Street and north of Oralabor Road. Major land use components include: Low and Medium Density Residential, Commercial, Mixed Use, Parks, Schools and Green Networks. The concept and bluebelt system is illustrated in Figure 5.10.

This area east of the present Ankeny City limits contains several environmental and topographic constraints as well as constraints due to the proximity to the Ankeny Regional Airport Facility. New development is arranged in a manner that preserves the most sensitive natural areas. This part of town has rugged terrain and beautiful landscape.

Typical urban-density residential development is restricted in areas close to the airport runway and flight paths. Restrictions apply to height and therefore density and intensity of land use. These areas are suitable for conservation developments.

Some existing subdivisions are also present in this area and are integrated into new neighborhoods by means of street connections and compatible land use. The concept in this growth area is to stay out of the valleys and encourage development on the ridges.

Low density residential developments are proposed in areas close to airport runways. Medium density, including row houses, bi-attached, townhomes and mixed uses are proposed further north. Neighborhood Commercial mixed use nodes are proposed at major intersections. These nodes are surrounded by medium density development transitioning to low density.

Each neighborhood has a civic center, in this case parks and schools that serve as the centers for neighborhoods. Collector streets proposed midway between section arterials accommodate vehicular, bicycle and pedestrian traffic and link the civic center of neighborhoods to arterial streets. These collector streets also allow for convenient movement of vehicular traffic through the community on a connected street network.

Figure 5.11 depicts the development concept for all growth areas presented at the end of the three day design workshop.

Figure 5.10: **Southeast Growth Area Concept**

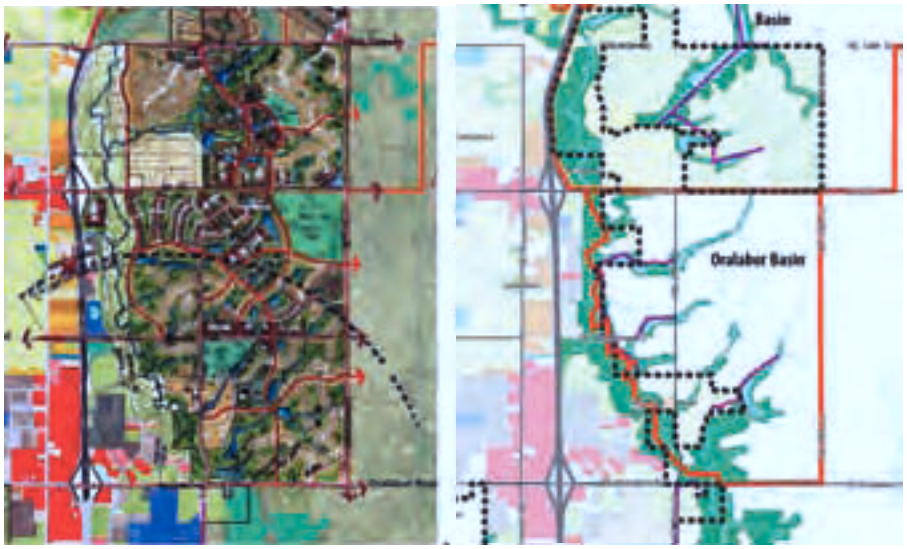
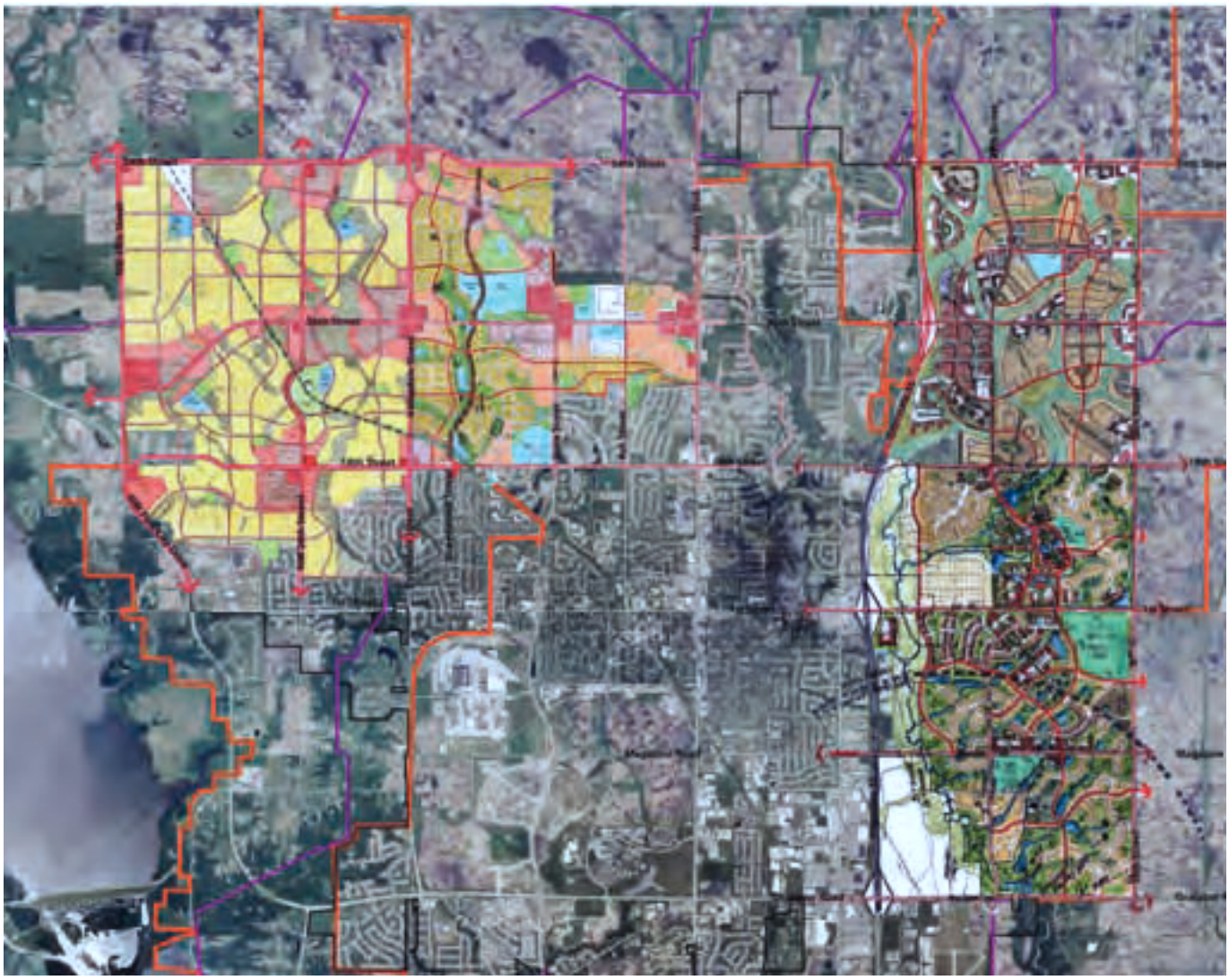


Figure 5.11: **Future Growth Areas Concept**



GENERALIZED LAND USE PLAN

As described earlier, the specific land use concepts prepared during the Design Workshop illustrate one application of comprehensive plan goals and design principles, including preservation of identified drainageways and wetland features. Because these goals and principles can be expressed through a variety of specific designs, the future land use plan must be general and flexible, while conforming to these goals and principles.

It was determined that the Future Land Use Plan should be derived from a generalization of these specific land use development concepts.

During that process, meetings were held with staff and the steering committee to assess the viability of the land uses as suggested by the land use concepts. Alternative scenarios for gross density of residential uses were analyzed. Land use designation for residential, commercial, business and industrial uses were evaluated in light of the projected demand estimates derived through population growth and land use proportionality methodologies (Chapter 2).

The initial specific land use development concepts were generalized into more typical future land use plan categories and changes were made to the initial plans to reflect a more realistic distribution of land uses.

The final future land use plan for the growth areas should be flexible and clear, while demonstrating the desired land use development goals and principles. Figure 5.12 depicts the generalized development concept. This concept is further generalized in the next section and is depicted in Figure 5.13

Figure 5.12: **Generalized Development Concept**

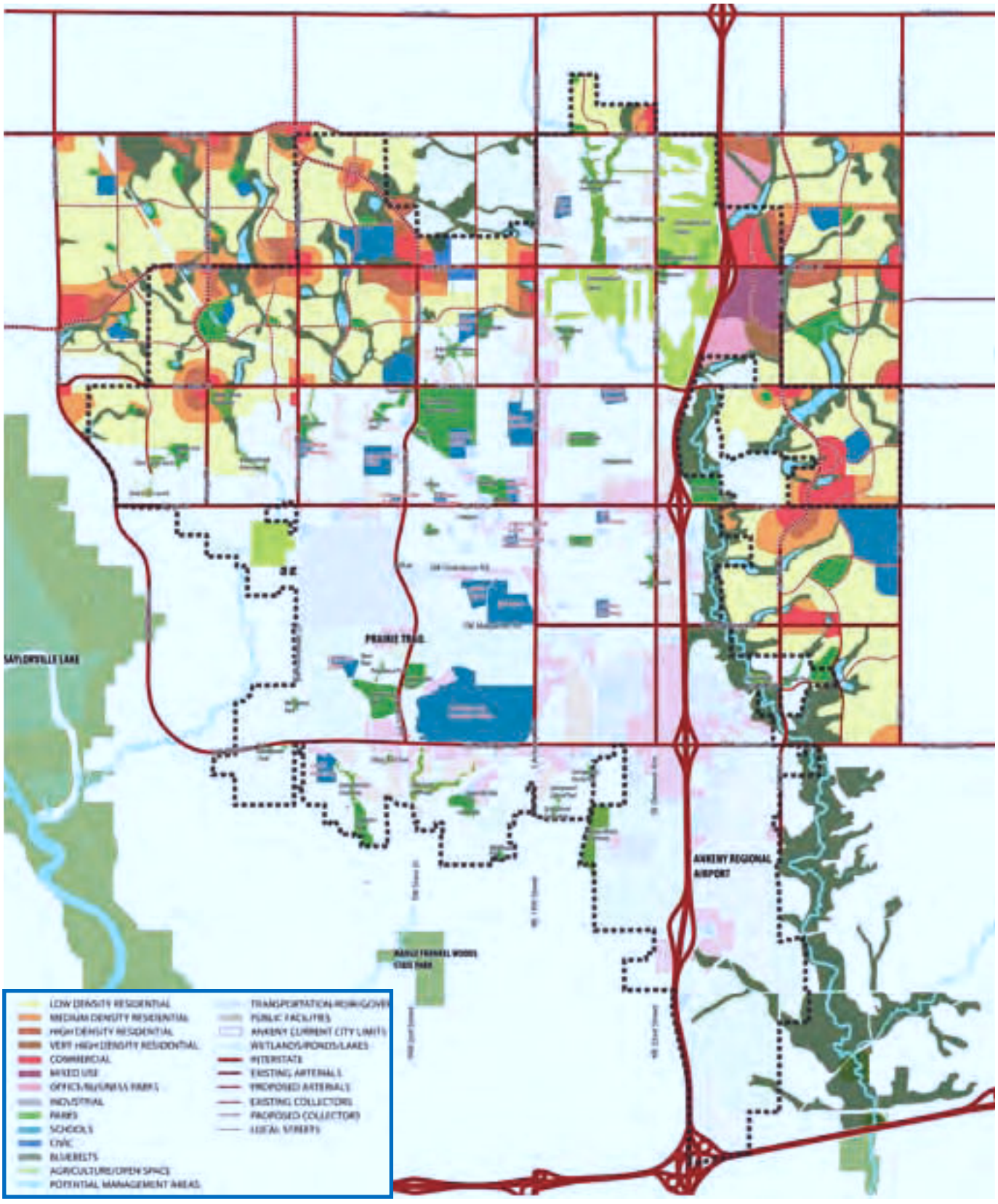
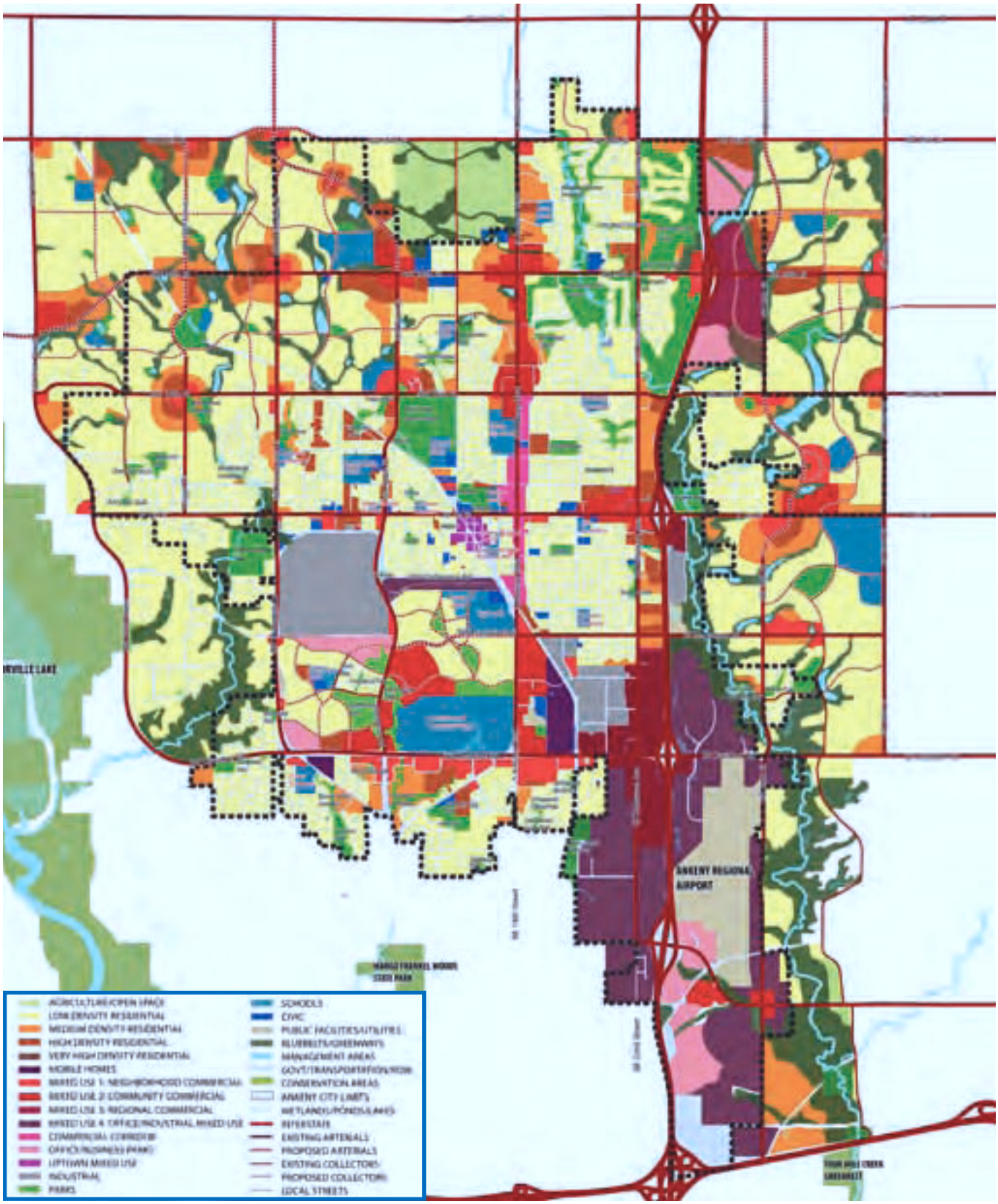


Figure 5.13: **Future Land Use Plan**



KEY ELEMENTS OF ANKENY FUTURE LAND USE PLAN

- Preservation of Natural Areas/ Bluebelts
- Residential Mix
- Commercial/Mixed-Use Nodes
- Business Parks/ Industrial Uses

RESIDENTIAL MIX

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Very High Density Residential

KEY COMMERCIAL/ MIXED USE NODES

- Regional Commercial Node
- Community Commercial Node
- Neighborhood Commercial Node

EXISTING COMMERCIAL DEVELOPMENT

- Uptown/Mixed Use
- Commercial/Mixed Use Corridor

KEY ELEMENTS OF THE FUTURE LAND USE PLAN

The Future Land Use Plan goal is to create a community in a natural setting comprised of neighborhoods with a variety of housing choices and densities, conveniently served by distinctive neighborhood retail and commercial services. The future land use map depicted in Figure 5.13 illustrates a Neighborhood Model arrangement of land uses and street and open space networks. The proposed arrangement of new residential areas assures adequate access to community facilities and compatibility with topography and environmentally sensitive areas.

The Future Land Use Map presents generalized land use for the areas that will experience growth in next 25 years. As indicated on this map, Ankeny will have to incorporate land beyond its current boundaries to accommodate growth as projected in the twenty five year planning horizon. Some of the key elements of the plan are discussed below:

- PRESERVATION OF NATURAL AREAS/ BLUEBELTS
- RESIDENTIAL MIX
- COMMERCIAL/MIXED-USE NODES
- BUSINESS PARKS/INDUSTRIAL USES

PRESERVATION OF NATURAL AREAS/BLUEBELTS

In addition to the goal of accommodating population growth, a major goal of comprehensive planning should be preserving natural resource areas such as forests, wetlands, streams, and drainage ways. Land use plan policies should explicitly recognize natural areas and open space as long term community amenities and should emphasize protecting such areas.

Ankeny's proposed Future Land Use Map protects both areas of future growth and the natural areas inside and surrounding the city. The comprehensive plan recommends policies to protect identified bluebelts and address storm water management issues. Bluebelts are identified on the Future Land Use Map and are considered in planning the future land use for surrounding areas. The plan places maximum emphasis in preserving such environmental areas.

Virtually all of the bluebelts identified by Nilles Associates as important natural features for protection and preservation are conserved by the future land use plan as an extensive open space network system. In several places, bluebelts and/or wetland areas are combined with future park features to create recreation areas. Recreational trails are integrated into the green open space network where appropriate. Specific proposed parks and trails are described in detail in Chapter 6, Parks and Trails. The future land use plan presents these bluebelt corridors as unifying elements that link neighborhoods rather than as development impediments. Linkages are created through these corridors to connect existing developed areas to future growth areas.

RESIDENTIAL MIX

New residential development in Ankeny should be focused in those areas designated by the Future Land Use Plan, following Neighborhood Model design principles. A disciplined approach of this nature will ensure cost-effective, efficient land use patterns that maximize the benefits of development to the community.

Residential neighborhoods are the foundation of any City. New residential development in Ankeny should occur in the context of planned neighborhoods containing a mixture of land uses, rather than disconnected, piecemeal housing tracts. The future land use plan guides growth to areas where public services are readily available or easy to extend.

A major planning objective is to preserve and maintain the vitality, quality and character of Ankeny's existing and future residential neighborhoods. The Future Land Use Plan identifies four different residential land use categories:

Low Density Residential

This includes residential development with urban services ranging in density from 1 to 5 units per acre with an average density of 3.5 to 4 units per acre. Under certain circumstances, these areas may also include small lot and attached single-family settings, up to 5 units per acre. These districts include the single-family areas that dominate land use in Ankeny and in developing areas are generally located toward the center of neighborhoods, buffered from arterial streets as indicated by Neighborhood Model Design Principles.

Medium Density Residential

This includes residential development with urban services ranging from 6-10 units per acre with an average density of 8 units per acre. This continuum ranges from moderate-density single family attached development to attached townhomes and low-density multifamily settings. These areas are located along section line roads and toward the periphery of neighborhoods.

High-Density Residential

This includes multi-family development with densities in range of 11-18 units per acre with an average of 15 units per acre. These areas generally are planned along arterials or as transitional uses between commercial and mixed-use areas and surrounding low-density residential. Multi-family development is also encouraged within the context of mixed use districts.

Very High Density Residential

This includes multi-family development with densities ranging from 19 units per acre or above with an average of 20 units per acre. These residential types include high rise apartment buildings at the regional commercial node at 36th street and I-35 Interchange in the Northeast Growth Area.

Table 5.2 depicts the residential density and the percent distribution of residential types across all growth areas, based on the land use concept plans prepared at the Design Workshop.

While the historical trend in Ankeny indicates a residential mix of 65% Single Family Detached, 10% Single Family Attached and 25% Multi Family, it is believed, as previously indicated, that these percentages will shift somewhat over time. It is believed that the residential mix over time will move toward about 50% Single Family, 25% Single Family Attached and 25% Multi-Family. In other words, while the multi-family proportion will remain about the same, more people will be living in attached dwellings.

COMMERCIAL/MIXED USE NODES

The Future Land Use Plan should strengthen and support local businesses, offer opportunities for investment and facilitate economic prosperity. An important component of achieving these goals is the appropriate accommodation of commercial enterprises in the community.

The distribution and location of commercial facilities in the community are detailed in the Future Land Use Map. The Future Land Use Plan ensures that there is a sufficient supply of commercial land to meet projected market demand for commercial services within the City's trade area. The plan provides an appropriate distribution and range of commercial areas throughout the City and ensures that future growth occurs in an orderly manner. The plan supports the idea of a commercial hierarchy comprised of a series of commercial nodes and corridors, varying in size, form, location and use. The plan also provides opportunities for redevelopment of older commercial corridors located within the built area of the City.

Strong commercial centers are an important component of Smart Growth and the Neighborhood Model. Such places act as the focal points for neighborhoods and for the community. Well designed com-

Table 5.2 **Residential Use Distribution (Growth Area Summary)**

Data Type	% units	units/acre	#units	# units existing	# acres	% Land Area
Single-Family Detached	47%	3	12,897	553	4,299	76%
Single-Family Attached	27%	8	7,256		907	16%
Multi-Family	23%	15	6,390		426	8%
Very High Density Multi-Family	3%	20	806.4		40	1%
Total	**100%**		**27,349**	**553**	**5,672**	**100%**

Category	Range	Average
Single-Family Detached (LDR)	(0-5 units/acre)	3 units/acre
Single-Family Attached (MDR)	(6-10 units/acre)	8 units/acre
Multi-Family (HDR)	(11-18 units/acre)	15 units/acre
High Density Multi-Family (VHDR)	(19 or above)	20 units/acre

mercial centers offer a mixture of different activities and land uses in a pedestrian oriented environment accessible to bicycles, pedestrians and transit users, in addition to automobiles. People who work, shop and live in or near a commercial center should be able satisfy many of their daily needs without necessarily using an automobile.

The most important commercial land use development in Ankeny has been the emergence of the regional "big box" retail center along South Delaware. This regional retail center serves not only Ankeny, but also much of north Des Moines and the surrounding Polk County area. This trend toward the grouping of numerous "big box" retailers in one location has paralleled a decline in the regional mall as the dominant retailing entity.

The Delaware Avenue area commercial development has characteristically been developed as superblocks, in which moderate or large scale structure clusters are surrounded by surface parking lots to accommodate regional access by private vehicles.

Commercial development occurs on different scales, ranging from neighborhood shops and services to regional commercial centers. Ankeny's new commercial development should be located within well-defined nodes, which can be broken down into the following categories:

- Regional Commercial Node,
- Community Commercial Node,
- Neighborhood Commercial Node

An additional major commercial area can be described as Major Office/Industrial Mixed Use. However, for purposes of this description of nodes, this additional area can be considered a variation of the regional commercial nodes.

Existing commercial development can be defined by several additional categories:

- Uptown/Mixed Use Node
- Commercial Corridor

Figure 5.14: **Growth Areas Commercial Centers**

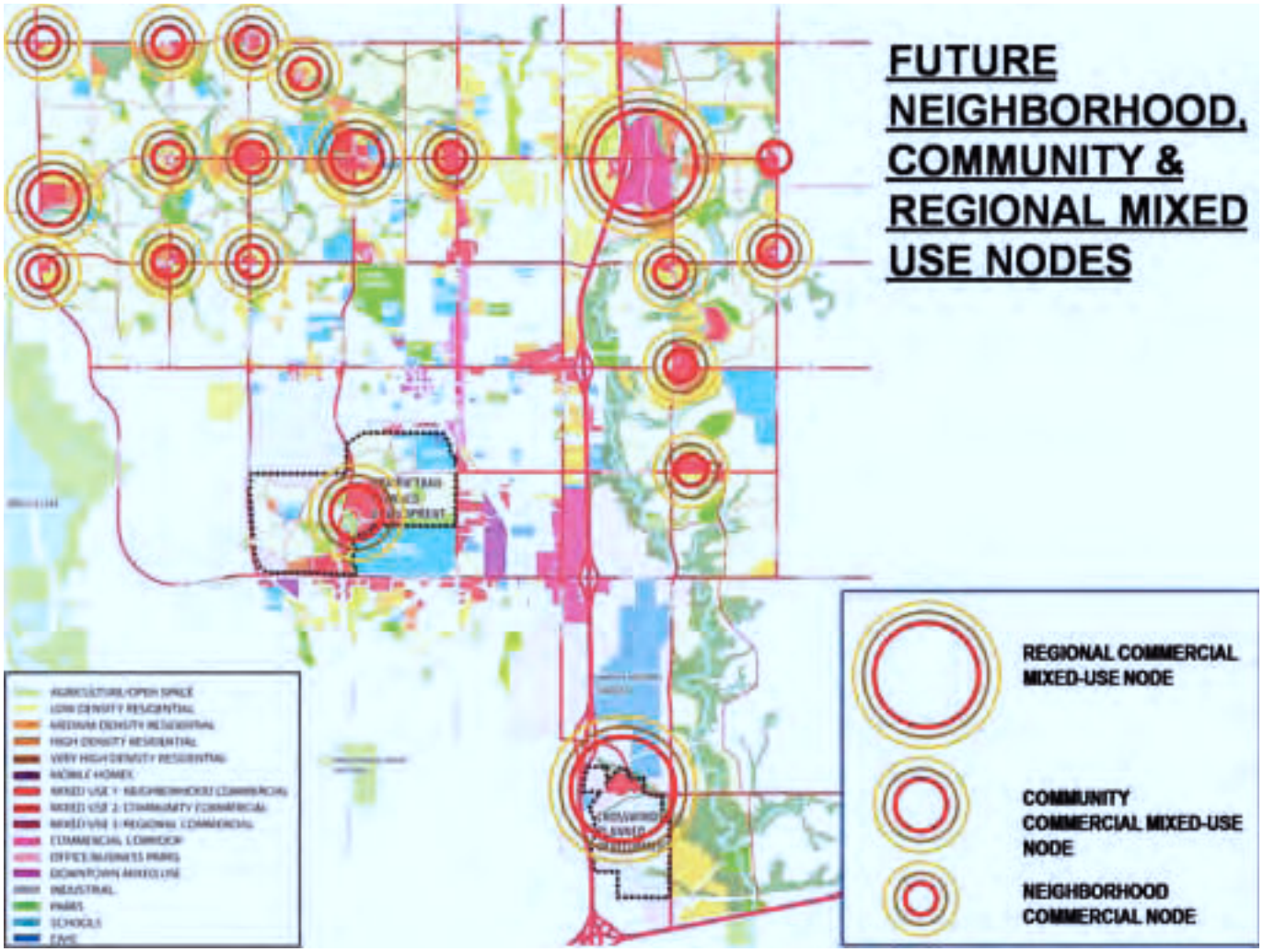


Figure 5.14 depicts the regional, community and neighborhood centers as proposed for the Ankeny Growth Areas. Figure 5.15 depicts the various commercial districts currently existing in Ankeny. Following is a general description of the characteristics of each commercial district type. Each category is defined, desirable site/building characteristics are indicated, and existing and future locations of each district type are described. The "site/building characteristics" should become the basis for the development of design guidelines geared to each commercial center type and adopted by the city for the review of proposed developments as a part of the development review process.

Mixed Use 3: Regional Commercial Nodes

Definition

The Regional Commercial Node is the largest scale commercial category. It is intended to serve as the regional focus of commercial activity, providing retail commercial services, entertainment and business offices for residents within the City, as well as outside the City including those in adjacent municipalities.

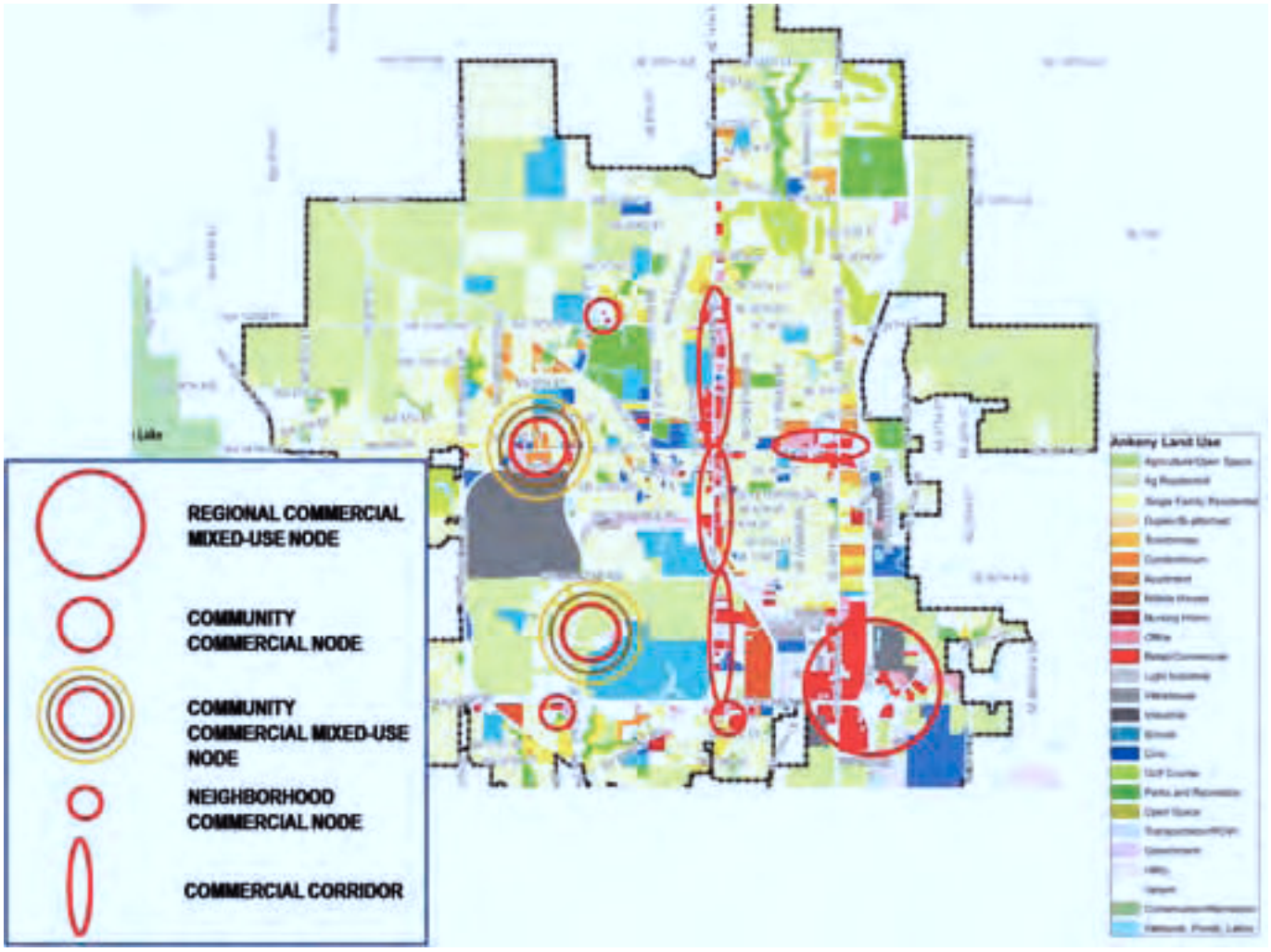
These nodes include self-contained, enclosed facilities featuring multiple anchor stores, more than 100,000 sq. ft. each, and many specialty retail stores and services, restaurants and entertainment venues. They also include the more recent development type known as the Big Box Center, such as that located on South Delaware Avenue in Ankeny. Typically, regional commercial centers include at least 1,000,000 sq. ft. total commercial space.

In addition to these two types of retail centers, regional commercial centers can include large hotels and motels, major employment centers, and mid to high rise office and mixed-use buildings.

Site/Building Characteristics

Regional Commercial uses are typically located at intersection nodes along major arterial highways and expressways, or along transit system transfer nodes.

Figure 5.15: Existing Developed Areas Commercial Districts



Major commercial nodes that are shopping malls typically total 100 acres or greater in area. Big Box Centers can be much larger. For example, total commercially developed land on South Delaware, north of Oralabor only, totals about 150 acres. Multiple stories and high volume spaces are common. Site orientation of major commercial centers is focused primarily on the needs and convenience of the motorist. Parking is generally in front of the building and clearly visible from the street.

Regional Commercial uses should incorporate well-defined entrances, shared internal circulation, properly spaced common access points, sidewalks and shade trees in parking lots, landscaping on planter strips between the parking lot and street, and well-designed, monument-type signage. Where possible, Regional Commercial centers should be designed to create safe, attractive and convenient vehicular and pedestrian linkages with adjoining land uses. Outparcel developments should be encouraged to provide buildings at the street right-of-way line to better define the public street space and provide a better pedestrian environment.

Existing Regional Commercial

Rapid growth of large retail outlets in Ankeny along the Delaware Avenue corridor is an indication of Ankeny's attractiveness to businesses and consumers. Because of the excellent access to the area provided by I-80 and I-35, the Delaware Avenue commercial area has developed as a big box center serving Ankeny residents as well as customers from the surrounding area.

Retailers along Delaware Avenue include Home Depot, Kohl's, Menards, Super Target, Wal-Mart Supercenter and Best Buy. Several large car dealerships have been established in the district, including Karl Chevrolet, Bob Brown Pontiac-GMC-Buick, Dewey Ford and Dewey Dodge-Jeep.

Future Regional Commercial

The plan recognizes the continuing role of Ankeny as a major regional commercial retail and employment center by designating sufficient land for those purposes. By identifying new sites for regional commercial development and making them attractive to businesses, Ankeny can be ready to accommodate new retailers, jobs, tax revenues and quality of life enhancements.

The Ankeny Future Land Use Plan proposes the development of a significant regional commercial node at the proposed 36th Street Interchange. A Regional commercial/employment center is proposed on the east side of I-35. Major uses proposed are Commercial, Hotel /Conference Center, Business Park and high rise Office/ Mixed Use. A Hotel and Conference Center across Interstate 35 from Otter Creek Golf Course, surrounded by high rise office/commercial development mixed with residential towers and high density residential apartments create an urban environment that is totally unique to this area. The Generalized Development Concept for this proposed new regional commercial center is depicted on Figure 5.16.

Also indicated on the Future Land Use Plan, and already under development, is the major regional mixed-use center at Corporate Woods Drive and Interstate 35. While the major development at that location, Crosswinds Business Park may be more light industrial and office than retail, the location nonetheless justifies designation as a regional commercial mixed-use node.

Mixed Use 2: Community Commercial Nodes

Definition

Community Commercial nodes are intended to serve as local foci of retail activity at sites distributed across the City to serve community commercial functions with free standing commercial uses and small shopping centers on larger lots generally anchored by supermarket facilities or a large retailer.

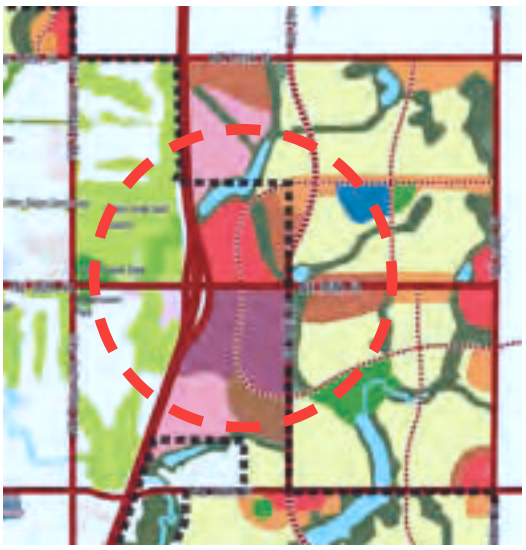
Such nodes include moderate to large scale (50,000 – 150,000 sq. ft.) anchors and may comprise small to moderate scale (typically 2,500 – 20,000 sq. ft.) support businesses attached to the anchor or as freestanding development. Businesses usually have a shared parking lot. Such development includes medium and high density land uses that draw their customer base from the larger community. This classification can include a mix of uses, including residential, in the same building or in the same development. Such activities have a moderate impact on nearby development.

Community commercial uses include all neighborhood commercial uses, convenience stores with gas stations, grocery stores, plant nurseries, paint/carpet stores, offices, apartments and community shopping centers.

Site/Building Characteristics

Community Commercial uses are typically located on arterials at major intersections (nodes) or in established commercial areas along arterials. Such nodes should be accessible to transit and should

Figure 5.16: Future Regional Comm. Center



supply an adequate amount of off-street parking. Shared off-street parking zoning provisions for mixed-use developments should be developed. Parcel sizes typically range from 20 to 35 acres.

Community commercial nodes should incorporate well-defined and accessible entrances, shared internal circulation, properly spaced common access points, ample sidewalks along streets and leading from streets to building entrances, shade trees in parking lots, landscaping on planter strips between the parking lot and street and well-designed, monument-type signage. Large parking areas should be broken up into separate, well-landscaped sub-areas and location of parking should not be limited to the street frontage but should also be placed to the side and rear of the main building. Community commercial nodes should be designed to create safe, attractive and convenient vehicular and pedestrian linkages with adjoining land uses. Adjacent land uses are usually commercial and or medium to high density residential.

One story is standard for the anchor store(s) using a high building volume and, smaller scale support businesses are typical. Support businesses may be clustered in a typical strip-type building and connected to the anchor(s), or built as freestanding structures. Newer mixed-use building types, combining first floor retailing with upper floor office and/or apartments should be encouraged.

Existing Community Commercial Nodes

As indicated by Figure 5.15, Existing Developed Area Commercial Districts, an existing Community Commercial Node is presently located at the intersection of Delaware Avenue and East 1st Street.

Future Community Commercial Nodes

The Ankeny Future Land Use Plan proposes development of community commercial nodes at three strategic locations:

- 36th and State Street Cross-section
- 36th and NE 44th Street Cross-section
- Prairie Trail Town Center

These future Community Commercial Nodes are illustrated in Figure 5.17.

Mixed Use 1: Neighborhood Commercial Nodes

Definition

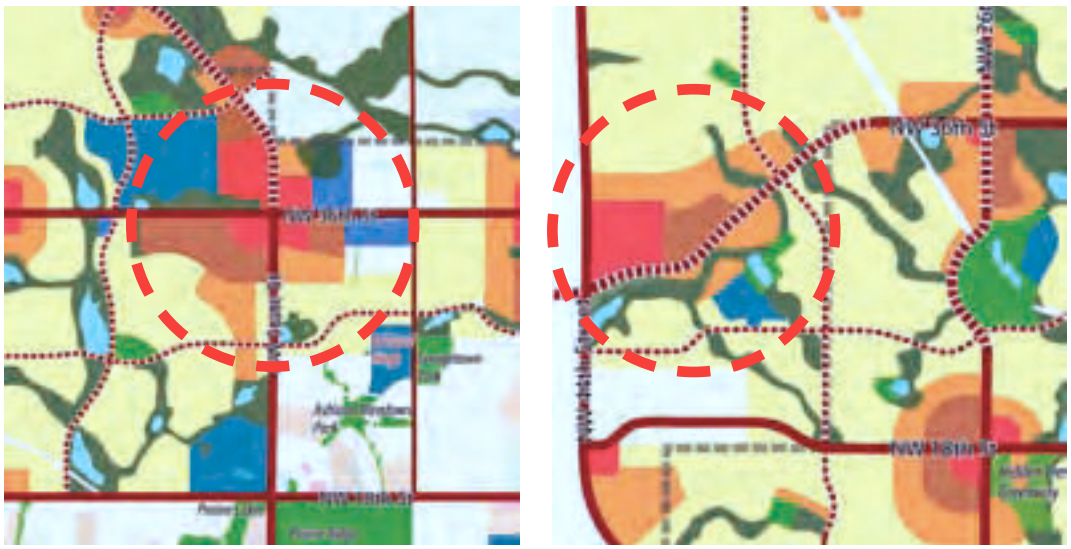
Neighborhood Commercial Nodes are small to moderate scale neighborhood-oriented commercial developments with small scale businesses (1,200 – 6,000 sq.ft.) clustered around an anchor store (35,000 sq.ft.), such as a small grocery store. Such nodes provide for offices, professional services and small retail uses that should be developed with a shop-front, pedestrian oriented character. Neighborhood Commercial areas are intended to provide for daily convenience shopping and service needs of nearby residents. Neighborhood nodes generally serve 10,000-20,000 people, within approximately a 1 mile radius of the commercial node. Examples of typical Neighborhood Commercial uses include gift shops, local coffee shops, delis, offices, restaurants, barber shops and beauty parlors, small neighborhood groceries or markets, shoe repair shops and medical-related offices or clinics. Convenience stores/gas stations can be considered neighborhood commercial uses if limited in size. Where the gas serving areas of these uses become very large, they are more appropriate in community commercial nodes.

Site/Building Characteristics

Neighborhood Commercial Nodes should be located at the intersection of collector and/or arterial streets. Such developments need to relate well to adjacent properties, which may include low, medium and high density residential uses. Safe and convenient access for both automobile and pedestrians should be provided. Site parcel depths should typically range from 250 to 350 feet and conform to the existing street grid pattern.

One story buildings are typical, although there may be an occasional 2-story building with offices or residential in the upper level. The majority of the ground floor façade should be composed of windows to attract shop-

Figure 5.17: **Proposed 36th & State Street And 36th & NE 44th Street, Communuty Commercial**



pers. Buildings should have a moderate setback to allow for some parking in front but maintain on-site circulation that comfortably accommodates pedestrian's safety and comfort. Parking areas should be located to the side of or behind the building, with the exception of one bay of angled or head-in parking along the street. Additionally, all off-street parking and vehicle use areas adjacent to residential uses should have buffer landscaping and screening, lighting and signage controls. Buffer yards should provide a landscaped separation between residential and commercial uses. Business entries should be clearly defined and easy to locate from streets and parking areas.

Existing Neighborhood Commercial Nodes

As indicated by Figure 5.15 Existing Developed Area Commercial Districts, existing Neighborhood Commercial Nodes are located at:

- NW 18th and State Streets
- W 1st and Linden Streets
- SW State Street and Oralabor Road
- S Ankeny Blvd. and Oralabor Road

Future Neighborhood Commercial Nodes

Potential neighborhood commercial nodes have been identified by the future land use plan to provide a community focal point with a mix of commercial and higher density residential uses. Such centers are distributed across the growth areas to provide access from nearby residential areas within easy walking distance (one-half mile radius).

The Ankeny Future Land Use Plan proposes development of neighborhood commercial nodes at most "section line arterial" intersections, as depicted on Figure 5.13. With these neighborhood commercial centers as planned, the demand for neighborhood uses should be served and residents would be able to walk for everyday goods and services should they choose.

Uptown/Mixed Use Nodes

Mixed-use development is fundamental to long term social and economic sustainability in today's community. It provides for a concentrated blend of high-density residential, retail, professional service, office, entertainment, leisure and other related uses at increased densities to create a pedestrian-oriented environment. Such development is preferred around a transit stop, where the density would decrease toward the edge of the node. Mixed Use should be located at the intersection of a collector and arterial streets or two arterial streets or where an existing commercial area has been established.

Mixed Use development should incorporate high quality architecture and urban design features such as attractive streetscapes, parks/plazas, and outdoor cafes. A majority of the ground floor façade should be composed of windows. Parking areas should be located behind buildings. Mixed use provides for a multimodal transportation system relying on transit, centralized parking pedestrian linkages, and an option for future light rail transit service. This classification allows for a mix of uses in the same building or in the same development such as small offices (dentists, insurance professionals, non profits, etc), small storefront retail establishments (coffee shops, cafes, shoe repair shops, gift shops, antique stores, specialty retail shops, hair salons, day care, drug store, etc.), professional offices, and high density residential uses.

Much of Ankeny's mixed use development should occur in neighborhood and community commercial nodes. Mixed Uses are also proposed as a dominant land use feature at the proposed regional commercial node at the 36th Street Interchange with Interstate 35. This area is intended for high rise office/commercial buildings with ramp parking. Areas along the extended NE 29th Street, north of E 1st Street are also proposed for Mixed Use. The Uptown Mixed Use category includes Ankeny's traditional town center as well as a new town center at the Prairie Trail development. A downtown area is the commercial and civic heart of a city and is characterized by retail, service, office and residential uses in addition to civic buildings. While major commercial development has in Ankeny migrated to locations along commercial corridors like Ankeny Blvd, and Delaware Avenue, the traditional downtown has remained a significant commercial/mixed use center.

Commercial/Mixed Use Corridor

Commercial Corridors are auto-oriented, primarily retail/service/office commercial and high density residential areas that serve surrounding neighborhoods as well as citywide consumers. In the hierarchy of the preceeding sections, they serve as combination neighborhood and community commercial centers. These corridors typically contain small-scale retail and personal services as well as community uses such as major grocery stores and offices. A variety of commercial building types such as strip centers, auto sales and repairs, high density apartments, building supplies and household goods are some examples of businesses in such corridors. These developments locate along major transportation corridors, typically lining both sides of the street. Businesses provide for many daily needs as well as specialized needs of shoppers.

In Ankeny, Commercial Corridors are of two types. The first is older "commercial strip" corridors characterized by minimal lot depth, small parcels, lack of development design consistency, and some conversion of originally residential buildings for commercial use. These corridors typically developed prior to 1970 and are often conversions to commercial use of areas originally platted for residential development. South Ankeny Boulevard, from 1st Street to Ordnance Road typifies the older commercial strip corridor in Ankeny. This corridor historically developed with a mix of land uses and today exhibits some signs of deterioration due to difficulty in competing with more favorable development sites with closer proximity to growth areas.

The second Commercial Corridor type is newer corridors, typically developed since 1980. These corridors were developed under more recent development standards specifically for commercial use and have resolved some of the most serious problems with the older commercial strips. Lot depth and size are adequate to provide for both the commercial development needs as well as on-site amenities such as landscaping and buffers to adjacent residential uses. Design standards such as building materials and signage reflect a higher quality. Signage is more controlled. Frontage roads, or at least connections between separate property parking lots, often mitigate the problem of multiple drive accesses typical of older commercial strips.

This newer type of commercial corridor is exemplified by North Ankeny Boulevard between 1st Street and NE 24th Street. Also, while it is useful to think of South Delaware Avenue as a "Regional Big Box Commercial Center", its development type also can be characterized as "Newer Commercial Corridor". While these newer commercial corridors have dealt with some of the shortcomings of the older commercial strip, they are still predominantly automobile-oriented districts not integrated into the surrounding neighborhood. Therefore, they are not recommended as a commercial development type in Ankeny's growth areas.

Rather than stringing out commercial development along corridors in a more or less ad-hoc fashion, today it is deemed much more desirable to provide commercial services in "nodes" at the intersections of major streets. Node development requires a more planned approach to coordinated land use, provides for integration of the commercial district into the surrounding neighborhood, and lends itself to mixed use development, pedestrian orientation and transit use much better than commercial corridor development.

Thus, Commercial Corridor is included in the commercial district hierarchy to describe existing areas only. While Ankeny's newer commercial corridors are viable, the deterioration of the South Ankeny Boulevard "strip" requires a public strategy to encourage revitalization. Lack of "curb appeal" in this corridor is a result of the mixture of façade types and qualities, inconsistent setbacks, multiplicity of free-standing signs, lack of site amenities and existing building conditions. Public strategies to deal with these issues, along with spot redevelopment, can enhance the image, economic viability and tax base of this corridor.

BUSINESS PARK/INDUSTRIAL DISTRICTS

The Future Land Use Plan provides attractive sites for future industrial and business park development. Ankeny should continue to provide additional employment opportunities to those who reside in the City as well as other residents of the Des Moines metro area. Areas designated as "Industrial" include traditional "heavy industrial" areas as well as business parks, accommodating developments that combine office, warehousing, and distribution, and limited industrial uses in "flex" buildings.

Ankeny has done a very good job of designating areas to provide for the entire range of Business Park and industrial uses. The annexation and development of the plan for Crosswinds Business Park is just the latest initiative to insure adequate area for business park and industrial use. The planned Regional Commercial Center at the new 36th Street interchange is proposed to accommodate the high-end office component of the business/industrial park spectrum. Prairie Crossing and other designated industrial/business park areas provide adequate land for industrial development within the planning period.

The Future Land Use map has a category called Office/Industrial Mixed Use (MU4). This category combines a variety of general commercial, office and industrial uses, but exclude high impact industrial establishments. MU4 areas in Ankeny include areas generally along Delaware Avenue south of Oralabor Road, northeast and southeast corner of Interstate 35 and Oralabor Road intersection and areas along NE 29th Street south of Oralabor Road.

a. Ankeny Business Park Sign; b. Casey's Headquarter in Ankeny; c. Metro North Business Park

FUTURE LAND USE FRAMEWORK

The following Table 5.3 Future Land Use Categories and Use Criteria summarize the land use characteristics of all the categories used in the Ankeny Future Land Use Map, Figure 5.13.

Table 5.3 Future Land Use Framework

Land Use Category	Use Characteristics	Features and Location Criteria
Agriculture and Open Space	• Generally in agricultureal or open space use. • Agriculture will remain the principal use during the planning period. • Extension of urban services is unlikely during the foreseeable future.	• These areas shoould remain in primary agriculture use. Urban encroachment, including large lot subdivisions, should be discouraged. • Primary uses through the planning period will remain agricultural. • Any interim large-lot residential development should avoid obstructions to future urban development and allow for future extension of urban services. • Typical zoning would be Agricultural.
Bluebelts/Greenways	• Includes environmentally sensitive areas, including high slopes, creek basins, floodplains, wetlands, wooded areas that will remain generally undeveloped.	• These areas should remain undeveloped or in passive recreation use. • Greenways should follow environmental features or be pre designated through development areas. • Good pedestrians and bicycle links should be provided, including non-motorized access to surrounding residential areas.
Low-Density Residential	• Restrictive land uses, emphasizing single-family detached development, although unconventional single-family forms may be permitted with special review. • Civic uses are generally allowed, with special permission for higher intensity uses.	• Primary uses within residential growth centers. • Should be insulated from adverse environmental effects, including noise, smell, air pollution, and light pollution. • Should provide a framework of streets and open spaces. • Typical densities range from 1 to 5 units per acre.
Medium Density Residential	• Restrictive land uses, emphasizing housing. • May incorporate a mix of housing types, including single-family detached, single-family attached, and townhouse uses. • Limited multi-family development may be permitted with special review and criteria • Civic uses are generally allowed, with special permission for higher intensity uses.	• Applies to established neighborhoods of the city that have diverse housing types, and in developing areas that incorporate a mix of development. • Developments should generally have articulated scale and maintain identity of individual units. • Develop in projects with adequate size to provide full services. • Tend to locate in complexes, but should include linkages to major community features. • Typical density is 6 to 10 units per acre. • Innovative design should be encouraged in new projects.

Table 5.3 **Future Land Use Framework (Continued)**

Land Use Category	Use Characteristics	Features and Location Criteria
High Density Residential	• Allows multi-family and compatible civic uses. • Allows integration of limited office and convenience commercial within primarily residential areas.	• Locate at sites with access to major amenities or activity centers. • Should be integrated into the fabric of nearby residential areas, while avoiding adverse traffic and visual impacts on low-density uses. • Traffic should have direct access to collector or arterial streets to avoid overloading local streets. • Requires Planned Development designation when developed near lower intensity uses or in mixed use developments. • Developments should avoid creation of compounds. • Attractive landscape standards should be applied. • Typical density is 11-18 units per acre.
Very High Density Residential	• Allows very high density multifamily uses such as residential towers and high rise condominiums	• Should be integrated into the nearby residential or commercial/mixed use areas, while avoiding adverse traffic and visual impacts on low-density use. • Typical density is in excess of 19 units per acre.
Mobile Homes	• Accommodates mobile homes which are classified under State law as "manufactured housing." • Single-family, small lot settings within planned mobile home parks.	• Develop in projects with adequate size to provide full services. • Tend to locate in complexes, but should include linkages to major community features. • Typical maximum density is 8 units per acre.
Mixed-Use 1 (Neighborhood Commercial Center)	• Includes a range of low-impact commercial uses, providing a variety of neighborhood services. • Small to moderate scale neighborhood oriented commercial developments with small scale business clustered around an anchor store such as small grocery store. • Includes higher-density residential uses. • Provides for daily convenience shopping and service needs of nearby residents.	• Should be located at intersections of arterial and/or collector streets. • Development needs to relate well to adjacent properties. • Uses should be limited in terms of operational effects. • Safe and convenient access for both automobile and pedestrian should be provided. • Good landscaping and restrictive signage standards should be maintained. • Good pedestrian/bicycle connections should be provided into surrounding areas.

Table 5.3 **Future Land Use Framework (Continued)**

Land Use Category	Use Characteristics	Features and Location Criteria
Mixed-Use 2 (Community Commercial Center)	• Includes a variety of commercial, office, and high-density residential uses. • Establishes larger buildings and parking facilities than Mixed-Use 1. • These serve as local foci of retail activity and are distributed across the City to serve community needs with freestanding commercial uses and shopping centers on larger lots.	• Should be typically located on arterials at major intersections (nodes) or in established commercial areas along arterial. • These should be fairly accessible to transit and should supply an adjacent amount of off street parking. • Traffic systems should provide alternative routes and good internal traffic flow. • Negative effects on surrounding residential areas should be limited. • Good landscaping and restrictive signage standards should be maintained. • Good pedestrian/bicycle connections should be provided into surrounding residential service areas.
Mixed-Use 3 (Regional Commercial Center)	• Includes a variety of commercial, office, and high-density residential uses, and limited industrial uses that do not generate noticeable external effects. • Intended to serve as the regional foci of commercial activity providing retail commercial services, entertainment and business offices for residents within the city as well as outside the City. • Business parks may combine office and light industrial/research uses. • Could include high intensity employment centers.	• Typically located at intersection nodes along major arterial highways or expressways, or along rapid transfer nodes. • Design standards should be enforced to ensure top-quality appearance. • Efforts should be made to ensure minimal negative impact on surrounding land uses. • Strict control over signage, landscaping, and design is necessary for locations nearer to low intensity uses. • Should incorporate well-defined entrances, shared internal circulation, limited curb cuts to arterial streets, sidewalks and shade trees in parking lots, landscaping on planter strips between the parking lot and street, and well-designed, monument-type signage.
Mixed-Use 4 (Office/Industrial Mixed Use)	• Includes auto-oriented community commercial, office, and industrial uses that do not generate noticeable external effects. • Business Parks may combine office and light industrial/research uses.	• Design standards should be enforced to ensure top-quality appearance. • Efforts should be made to ensure minimal negative impact on surrounding land uses. • Strict control over signage, landscaping, and design is necessary for locations nearer to low intensity uses.

Table 5.3 **Future Land Use Framework (Continued)**

Land Use Category	Use Characteristics	Features and Location Criteria
Commercial Corridor Mixed Use	• Include auto-oriented, primarily retail/service/office commercial and high density residential areas that serve surrounding neighborhoods as well as citywide consumers. • Typically contains small scale retail and personal services as well as community uses such as major grocery stores and office buildings.	• Typically located along major transportation corridors, lining both sides of the street. • Pedestrian traffic should be encouraged and neighborhood scale retained where applicable. • Signage and site features should respect neighborhood scale. • Commercial and office development in mixed-use areas should minimize impact on housing.
Office/Business Park	• Business parks may combine office and light industrial/research uses. • Provides for users that do not generate noticeable external effects.	• Strict control over signage, landscaping, and design is necessary for locations nearer to low intensity uses.
Industrial	• Industrial provides for a range of industrial enterprises, including those with significant external effects.	• General industrial sites should be well-buffered from less intensive use. • Sites should have direct access to major regional transportation facilities, without passing through residential or commercial areas. • Developments with major external effects should be subject to Planned Development review.
Parks	• Includes parks, recreation, designated greenways and community open space.	• Neighborhood parks (5 to 10 acres) are generally located in the center of each neighborhood (1 per section of land). • Community parks (10-50 acres) should be distributed around the City with a 1 to 2 mile service radius. • Parks should be served by the comprehensive trail and greenway system.
Schools	• Includes schools.	• These areas are generally located in the center of the neighborhood and should function as an open space area for the neighborhood. • They may include an elementary or middle school and/or neighborhood park, depending on the specific needs of the neighborhood.

Civic	• Includes churches, libraries, and other public facilities that act as centers of community activity.	• May be permitted in a number of different areas, including residential areas. • Individual review of proposals requires an assessment of operating characteristics, project design, and traffic management.
Public Facilities and Utilities	• Includes facilities with industrial operating characteristics, including public utilities, maintenance facilities, and public works yards.	• Industrial operating characteristics should be controlled according to same standards as industrial uses. • When possible, should generally be located in industrial areas.

LAND USE COMPATIBILITY

Some of the most difficult issues in plan implementation arise at boundaries where more intensive uses are proposed adjacent to less intensive use.

Table 5.4 provides a land use compatibility guide, assessing the relationships between existing land uses and providing a basis for review of proposals based on their geographic context.

Compatibility Rating Key

The following key explains the rating system used in Table 5.4 Land Use Compatibility Guide:

5. Identical to existing land uses or completely compatible. Development should be designed consistent with good planning practice.

4. The proposed use is basically compatible with the existing adjacent use. Traffic from higher intensity uses should be directed away from lower intensity uses. Building elements and scale should be consistent with surrounding development.

3. The proposed use may have potential conflicts with existing adjacent uses, which may be remedied or minimized through project design. Traffic and other

Table 5.4 **Land Use Compatibility Matrix**

Proposed Land Use	Agriculture	Low Density	Medium Density	High Density	Very High Density	Mobile Homes	Mixed Use 1	Mixed Use 2	Mixed Use 3	Mixed Use 4	Comm. Corridor	Office/BP	Downtown MU	Industrial	Parks	Schools	Civic
Agriculture	-	2	2	1	1	2	2	2	2	2	3	3	2	4	2	3	4
Low Density	2	-	4	2	2	2	2	2	1	1	2	1	3	1	4	3	4
Medium Density	2	4	-	3	3	4	3	2	1	1	3	2	4	1	4	3	4
High Density	1	2	3	-	4	4	4	3	2	2	4	2	5	1	4	4	4
Very High Density	1	2	3	4	-	4	4	3	3	3	4	3	5	1	4	4	4
Mobile Homes	2	2	4	4	4	-	4	4	3	3	3	2	2	2	3	3	4
Mixed Use 1	2	2	3	4	4	4	-	3	3	3	4	3	5	2	4	3	4
Mixed Use 2	2	2	2	3	3	4	3	-	4	4	4	4	4	3	3	3	3
Mixed Use 3	2	1	1	2	3	3	3	4	-	5	3	5	3	3	2	2	3
Mixed Use 4	2	1	1	2	3	3	3	4	5	-	3	4	2	5	2	2	3
Comm. Corridor	3	2	3	4	4	3	4	4	3	3	-	3	3	3	2	2	3
BP/Office	3	1	2	2	3	2	3	4	5	4	3	-	2	4	2	2	3
Downtown MU	2	3	4	5	5	2	5	4	3	2	3	2	-	2	4	3	4
Industrial	4	1	1	1	1	2	2	3	3	5	3	4	2	-	2	1	1
Parks	2	4	4	4	4	3	4	3	2	2	2	2	4	2	-	5	5
Schools	3	3	3	4	4	3	3	3	2	2	2	2	3	1	5	-	5
Civic	4	4	4	4	4	4	4	3	3	3	3	3	4	1	5	5	-

external effects should be directed away from lower-intensity uses. Landscaping, buffering, and screening should be employed to minimize negative effects. A Planned Unit Development may be advisable.

2. The proposed use has significant conflicts with the preexisting adjacent use. Major effects must be strongly mitigated to prevent impact on adjacent uses. A Planned Unit Development is required in all cases to assess project impact and define development design.

1. The proposed use is incompatible with adjacent land uses. Any development proposal requires a Planned Unit Development and extensive documentation to prove that external effects are fully mitigated. In general, proposed uses with this level of conflict will not be permitted.

REGIONAL INFLUENCES

As Ankeny ponders its short and long-term growth, it is prudent to consider regional influences that either are, or shortly will be impacting that growth. These influences are summarized below on Figure 5.18 and are discussed in turn as follows.

ANKENY SCHOOL DISTRICT

Ankeny School District's rapid student growth has paralleled Ankeny's overall population growth. A few statistics documenting that growth are indicated below.

- Projected to serve more than 8,200 students in 2009-2010
- Is the 10th largest district in the state (student enrollment)
- Is the 2nd fastest-growing district in the state
- Encompasses 11 school buildings in 51.93 square miles
- Has more than 360,540 miles driven by buses per year

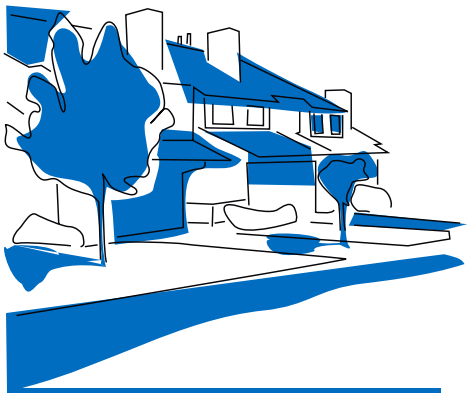
The 8,200 students projected to be served in the 2009-2010 school year are projected to increase to 9,560 by the 2013/2014 school year, an average increase of 340 students per year. It is clear that the Ankeny School District is a major factor in Ankeny land use, as it is in all other aspects of community life. As one example, collaborative efforts in community recreation have been very successful in meeting the overall recreational needs of all Ankeny residents. Similar opportunities for collaboration between the city and the school district abound.

As indicated on Figure 5.18, currently delineated Ankeny growth areas stay within the limits of the Ankeny School District boundary. However, northern growth is planned right up to the North 54th Street school district boundary and the city limits in fact extend over that boundary today. Further, Ankeny sanitary sewer infrastructure is capable of serving areas north of 54th. Also, the projected growth areas east of Interstate 35 consume all but four square miles of the school district boundary area in that direction. Keeping in mind that the total growth area depicted is enough land for the next twenty-five years of growth, the issue of Ankeny growing outside the school district boundary is not immediate. However, it is an issue in the long term. And, if growth pressures to the north focus community growth primarily in that direction, the issue could come up in the mid-term.

NORTHEAST BELTWAY CORRIDOR

Figure 5.18 indicates the current iteration of the Northeast Beltway study corridor. This potential freeway facility obviously is a major factor in Ankeny's long-term growth and will frame the growth discussion between Ankeny and several of its neighbors:

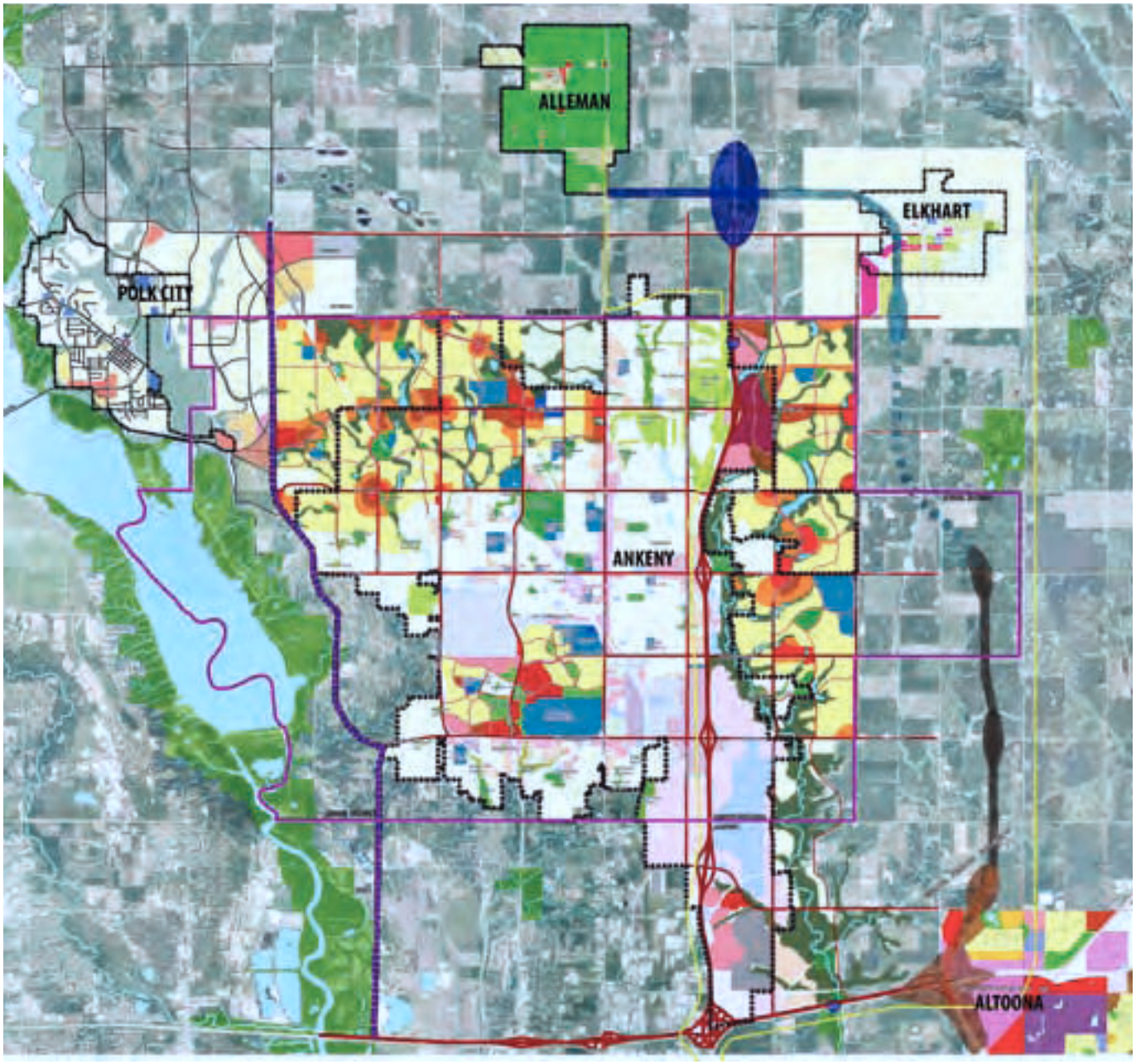
- Altoona's Future Land Use Plan, depicted on Figure 5.18, appears to extend west of the beltway corridor but in fact was intended to extend only to the assumed beltway in an earlier delineated corridor. Ankeny's annexation extending the city limits down to Interstate 80 west of Fourmile Creek puts the city in a logical position to oversee future development east of Fourmile Creek to the beltway corridor.
- Long term, new intersections on the beltway at Oralabor Road and 1st Street would become new gateway entrances into Ankeny and therefore should be under Ankeny's jurisdiction.
- The land use interface between Ankeny and Elkhart remains unresolved. As indicated on Figure 5.18, Elkhart has done some preliminary land use planning extending west to NE 38th Street and south to NE 54th Street (NE 118th Avenue). This was in anticipation of an earlier beltway corridor alignment that "turned the corner" just south of State Highway 87.
- Earlier beltway alignments were on an east-west line south of State Highway 87, which is the Elkhart interchange on Interstate 35. The current corridor alignment is moved a half mile to the north of the Highway 87 alignment. The current Ankeny growth boundary extends within one mile of Highway 87. As any long-term growth discussion needs to include Ankeny growth to the north, the issue of the beltway alignment and growth plans of Alleman need to be closely monitored.



REGIONAL INFLUENCES IMPACTING ANKENY'S GROWTH INCLUDE

- Ankeny School District
- Northeast Beltway Corridor
- Polk City

Figure 5.18: **Regional Land Use Influences**



POLK CITY

While various past agreements has established a boundary line between Ankeny and Polk City at NE 44th Street, Figure 5.18 shows the Polk City Future Land Use Plan, which implies extension of that community a mile east of NE 44th, north of NW 54th Street. As with Elkhart, this was also in anticipation of an earlier beltway corridor, the alignment of which is evident on their plan. The appropriate boundary between Ankeny and Polk City is a land use issue that also should be resolved.

REVITALIZATION AREAS

Ankeny is a relatively young community, with most of its growth having occurred since 1960. However, as illustrated in Figure 5.19, there were people in Ankeny prior to 1960 and developed areas of Ankeny dating back to the early 1900's. As in every community, there are areas of Ankeny that can be appropriately identified as needing revitalization. This subsection identifies a planning framework for identifying Ankeny revitalization areas and targets several specific areas for further analysis.

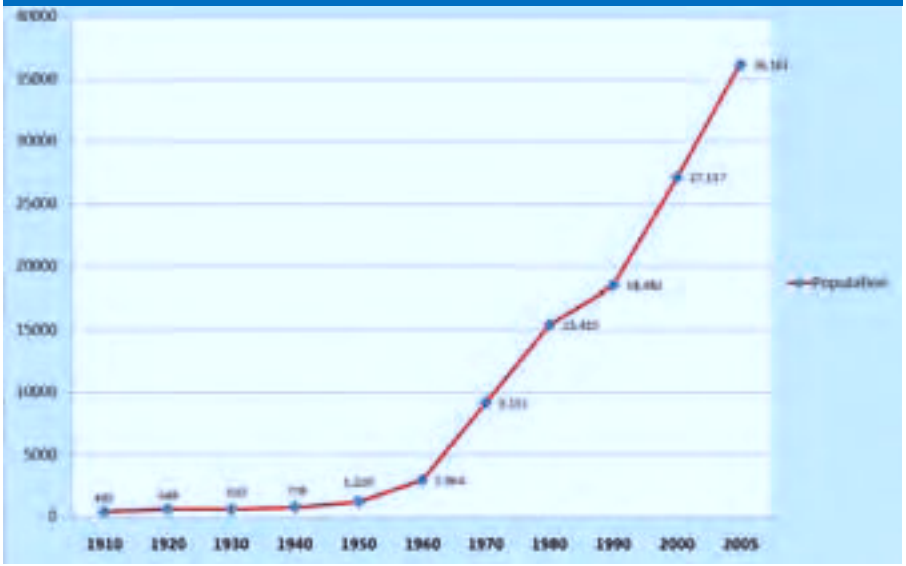
NEIGHBORHOOD CHANGE FRAMEWORK

Analyzing neighborhood change and developing strategies to revitalize neighborhoods dates back to the 1950's "Urban Renewal" legislation as a modern urban planning focus. Recent approaches are derived from the 1990's "New Urbanism" movement and include the approach in Form-Based Codes, by Parolek, Parolek and Crawford, 2008. This approach recommends the designation of each neighborhood with one of three classifications with respect to degree of change:

1. **Preserve.** A neighborhood whose size and character should be protected and maintained.
2. **Preserve and Enhance.** A neighborhood that needs to be strengthened.
3. **Evolve and Transform.** A neighborhood that could be changed to accommodate growth in the community.

This classification system can be applied to corridors, subareas, and neighborhoods. The basis for placement of an area in a particular neighborhood change category is primarily a survey of existing conditions. As documented in the 2004 Comprehensive Plan, nearly all of Ankeny's existing housing stock is in excellent condition. This would suggest that virtually the entire community be placed in the "Preserve" category of neighborhood change. Nonetheless, at staff and Steering Committee review sessions, several areas of focus were suggested for evaluation. These areas are indicated on Figure 5.20 and summarized here.

Figure 5.19: **Ankeny Growth**

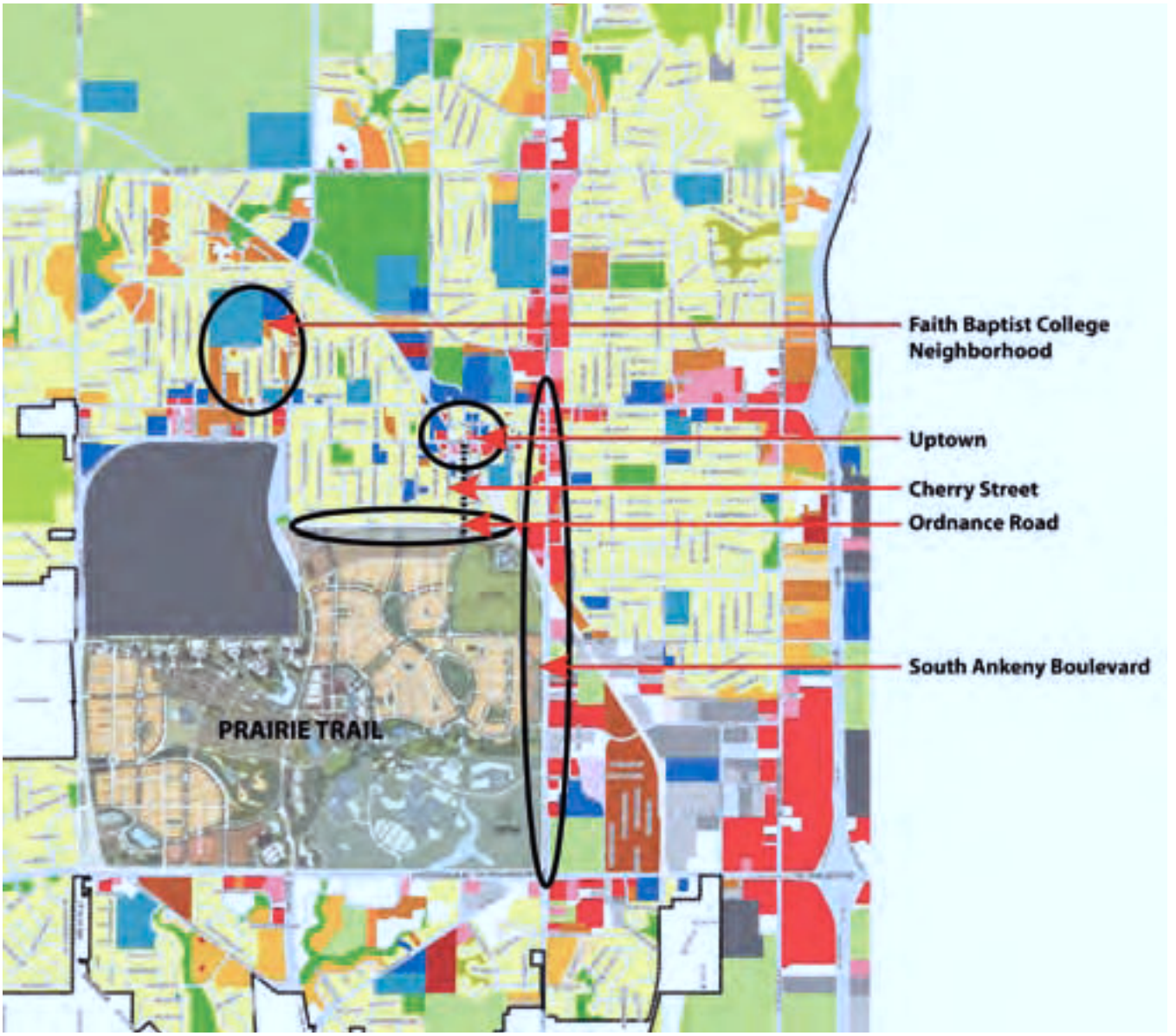


a. Ankeny Uptown District; b. Ankeny Uptown District Streetscape;

ANKENY UPTOWN DISTRICT

Ankeny's Uptown District remains the historical heart of the community and an important symbolic as well as economic focal point of the community. Development of the new Prairie Trail Town Center has underscored the importance of continuing Uptown revitalization and redevelopment efforts and linking the Uptown District to Prairie Trail (see Figure 5.20). The entire Uptown Neighborhood, which can be defined as extending from South Ankeny Boulevard to State and from West First Street to Ordnance Road, should be considered a "Preserve and Enhance" neighborhood, due to its status as the oldest Ankeny neighborhood. While the overwhelming majority of homes and structures in this neighborhood are in good condition, consideration should be give to securing rehabilitation assistance to those few homes needing improvement where the owner cannot afford the cost.

Figure 5.20: **Ankeny Neighborhood Change Areas**



A revitalization strategy is illustrated in Figure 5.21 for the more focused Uptown District from South Ankeny Boulevard to SW Elm Street and from West First Street to south of SW Third. The components of a recommended development strategy for the Uptown District include the following:

Land Use. A review of land uses in the district, with emphasis upon appropriate land use transitions and buffering of commercial uses from single-family residential uses. An analysis of Uptown commercial parking needs should precede the land use analysis.

Redevelopment Opportunities. A delineation of opportunity sites for infill redevelopment. Figure 5.21 illustrates several potential redevelopment sites with suggested infill land uses.

Regulatory Review. Ankeny's zoning ordinance and site plan review regulations should be reviewed to insure they are working to support the Uptown District's historical development character. Permitted uses, bulk regulations, design standards, off-street parking and sign regulations all should be tailored to a pedestrian-oriented traditional downtown district character.

Incentives. Unfortunately, the private market sometimes works against the preservation and improvement of older commercial districts like Ankeny's Uptown. As a district ages and property val-

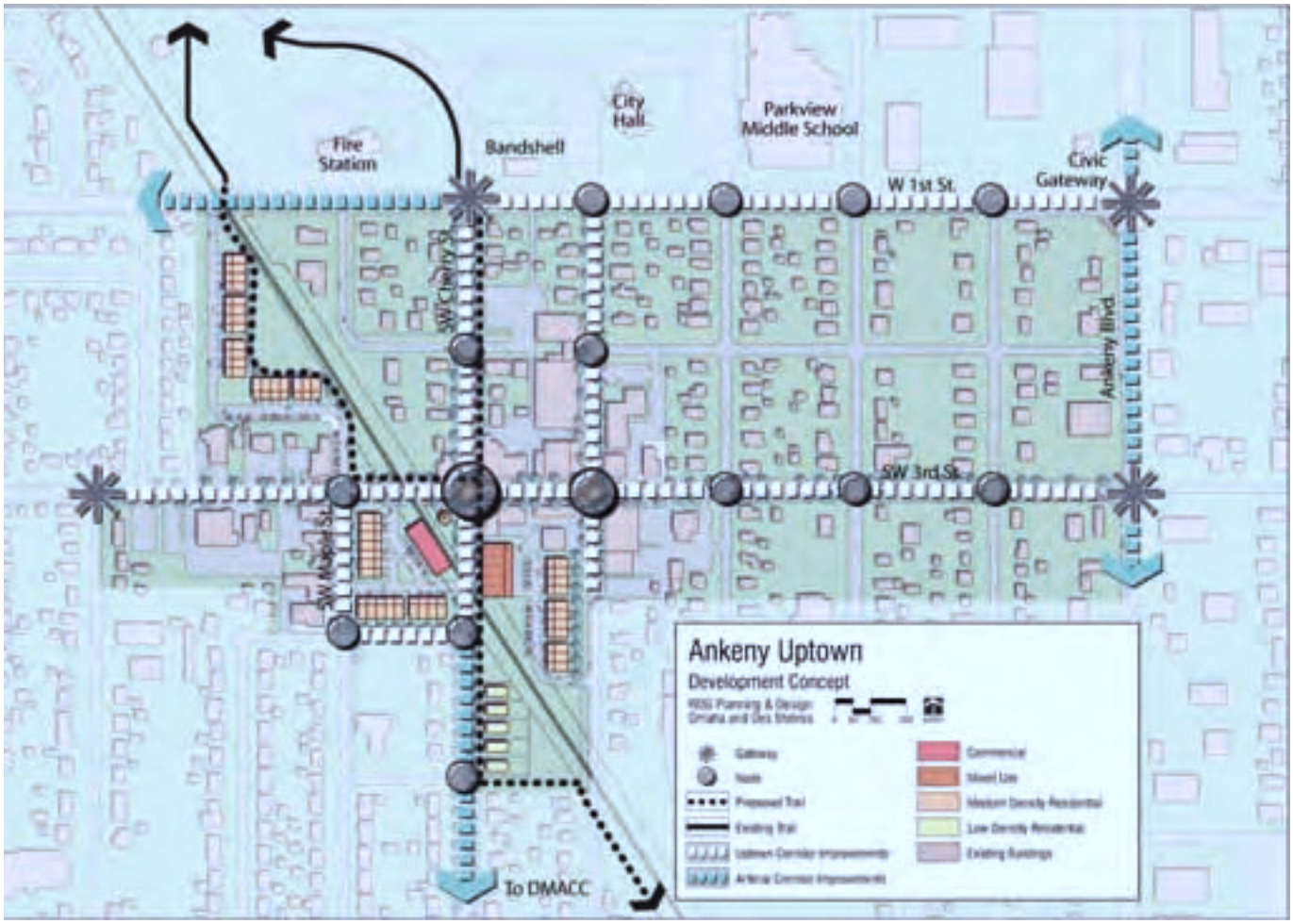
ues decline over time, reinvestment decisions become more and more difficult to justify economically. Redevelopment on Uptown sites involves a number of unknowns and additional costs as compared to "greenfield" development on the edge of town. These problems are the justification for public intervention in the private market with incentives to encourage the preservation and improvement of districts like Ankeny's Uptown.

Incentives to encourage storefront and general building renovation in the Uptown District, as well as housing rehabilitation incentives, should be investigated. In order to accomplish infill redevelopment, the City is likely to have to provide incentives that could range from providing Tax Increment Finance District benefits to becoming an active partner in the redevelopment of certain key sites. A plan to identify redevelopment priorities and needed incentives is therefore a first step toward encouraging additional redevelopment in Uptown.

Trail Extension/ Railway R.O.W. Abandonment. The High Trestle Trail Trail brings an important regional recreational facility right to the edge of the Ankeny Uptown District. This trail needs to extend through the Uptown District and on to Ankeny southside neighborhoods, including Prairie Trail. Figure 5.21 shows alternative routes a trail through Uptown could take. However, the remaining railroad corridor south of West First Street could become a significant trail link between the High Trestle Trail and existing

a. Ankeny Uptown District

Figure 5.21: **Uptown Development Concept**



a. Kirkendall Library; b.Park Trail; c. Uptown District Mixed Use; d. Ankeny Police Headquarters

trails to the south, and abandonment of that right-of-way should be pursued.

Gateways/Streetscape/Signage. In Figure 5.21, Uptown District recommended public enhancements are summarized. Key business district entrance locations are identified and wayfinding district signage is recommended at these locations. Key entrance corridors are identified and should be reviewed for needed enhancements. Finally, major and minor intersection nodes are identified and appropriate pedestrian amenities should by designed and installed at these locations.

CHERRY STREET LINK TO PRAIRIE TRAIL

Cherry Street has been identified as a critical linkage connecting the Uptown District and parks facilities north of West First to the new Prairie Trails Town Center. The Cherry Street corridor should be enhanced to fulfill this important role. In Chapter 6: Parks and Trails, "complete streets" are defined and Cherry Street is recommended to be improved to this category.

ORDNANCE ROAD

Cherry Street currently ends at Ordnance Road and the linkage of Uptown and Prairie Trail via Cherry requires the purchase of right-of-way and extension of the roadway through the industrial area along the south side of Ordnance Road. The extension of Cherry Street will connect this industrial district to Prairie Trail, thereby creating opportunities for redevelopment of underutilized property along Ordnance Road.

In the hierarchy of neighborhood change above, Ordnance Road should be considered in the "Evolve and Transform" category. An inventory of existing property uses and conditions should be undertaken, with property-owner and public input, to identify development opportunity sites and appropriate city involvement and policies.

SOUTH ANKENY BOULEVARD: NORTH OF ORDNANCE ROAD

In the above section, South Ankeny Boulevard was identified as an "older strip commercial" corridor in the hierarchy of Ankeny commercial districts. Considering existing conditions, vacant land and economic vitality, South Ankeny Boulevard should be considered as two separate segments. The northern section, north of Ordnance Road, is the older commercial strip, while the section south of Ordnance Road is more recently developed frontage and vacant land. The northern section consists of retail, service and office uses while the southern section includes some light industrial uses. The northern section can be included as a corridor in the "Evolve and Transform" neighborhood change category, while the southern section represents a development opportunity.

Figure 5.22 indicates existing land use along South Ankeny Boulevard, north of Ordnance Road. This portion of the corridor is characterized by:

- Original platting as a residential district, particularly on the west side of the street. Therefore, there is a prevalence of undersized parcels for commercial use on the west side. The east side includes some areas of larger commercial scale parcels, creating several larger, multi-tenant retail centers.
- A multiplicity of separate commercial sites, each with separate access and off-street parking.
- Conversion of residential properties to commercial use.
- A section of residential use, west side between Peterson Drive and Eastlawn, with the rear of the residential properties fronting South Ankeny Boulevard.

There is some incidence of poor building conditions and vacant buildings along this section of Ankeny Boulevard. These conditions demonstrate the marginal conditions of specific properties and the general weakness of this district in the Ankeny commercial market. As a "brown-

Figure 5.22: **South Ankeny Blvd. Existing Land Use**

Figure 5.23: **Realignment of Ordnance Road**

field" district, the revitalization of this area faces numerous site development costs and unknowns making redevelopment difficult. Specific public actions should be considered to aid this corridor to "Evolve and Transform" into a more viable commercial district.

One example of a redevelopment opportunity is the group of vacant and/or poor condition properties north of the railroad tracks on the west side of the street.

Figure 5.23 indicates in schematic format the possibility of a realignment of the Ordnance Road and South Ankeny Boulevard intersection if the railroad right-of-way west of Ankeny Boulevard were to be abandoned. This realignment encourages redevelopment on this underutilized South Ankeny Boulevard site while aligning Ordnance Road with SE 8th Street, which has continuity east to Delaware Avenue.

It is recommended that South Ankeny Boulevard north of Ordnance Road be designated for preparation of a specific revitalization plan. The components of this plan should include:

Land Use Review. Inventory and analysis of appropriate land use designations along the corridor.

Opportunity Sites. Designation of specific redevelopment opportunity sites and preparation of development concepts and preliminary cost/benefit analysis of redevelopment projects.

Public Incentives. An evaluation of the public incentives appropriate to encourage implementation of corridor revitalization or redevelopment goals.

Regulatory Review. Review of zoning and site plan regulations to insure regulations that further stated corridor objectives.

Access and Parking. Investigation of possibilities for shared access, parking and frontage/backage road concepts.

Streetscape Enhancements. Preparation of a streetscape enhancement plan to improve the appearance of this important Ankeny gateway corridor.

SOUTH ANKENY BOULEVARD: SOUTH OF ORDNANCE ROAD

South of Ordnance Road, South Ankeny Boulevard takes on a quite different character. For many decades constituting the "edge of town", this area had experienced sparse development until recently. Consequently, the mixed office, commercial and light industrial development along this segment is recent and in good condition. As indicated on Figure 5.24, most of the frontage north of Lorenz Drive (DMACC Blvd) is developed, although there are several vacant internal parcels of significant size.

To the west side of the corridor lies the Prairie Trail development on both sides of Magazine Road, with the Ankeny School Districts new Middle and High School project fronting on South Ankeny Boulevard. To the south, the huge DMACC campus extends south to Oralabor Road. These two developments will likely have a positive influence on the South Ankeny Boulevard frontage to the east, with the result that land south of Lorenz Drive should develop in the near future.

Of particular significance is the vacant 35-acre tract to the northeast of the South Ankeny Boulevard and Oralabor Road intersection. It is important to note the large Four Seasons Mobile Home Park directly to the east. The Ankeny Parks Plan, completed in 2007, identified this area as one of the few developed neighborhoods in Ankeny deficient in access to a neighborhood park. Figure 5.25 is an update of the map from the Park Plan identifying this deficiency.

Consequently, given the neighborhood park deficiency in this area, it is recommended that the development of the vacant 35-acre tract include the development of a park. A depiction of a proposed land use scheme is shown on Figure 5.26. It is recommended that the southernmost approximately 20 acres be developed as a commercial-office mixed use development, while the northern 15 acres include a 5-7 acre neighborhood park, with the remaining acreage developed as medium to high density multiple-family residential.

REVITALIZATION AREAS

- Neighborhood Change Framework
- Ankeny Uptown District
- Cherry Street Link to Prairie Trail
- Ordnance Road
- South Ankeny Boulevard - North of Ordnance Road
- South Ankeny Boulevard - South of Ordnance Road
- Faith Baptists College Neighborhood

UPTOWN DISTRICT REDEVELOPMENT STRATEGY

- Land Use
- Redevelopment Opportunities
- Regulatory Review
- Incentives
- Trail Extension/Railway ROW Abandonment
- Gateway/Streetscape/Signange

Figure 5.24: **South Ankeny Blvd. Existing Conditions**

Figure 5.25: **Neighborhood Parks Service Areas**

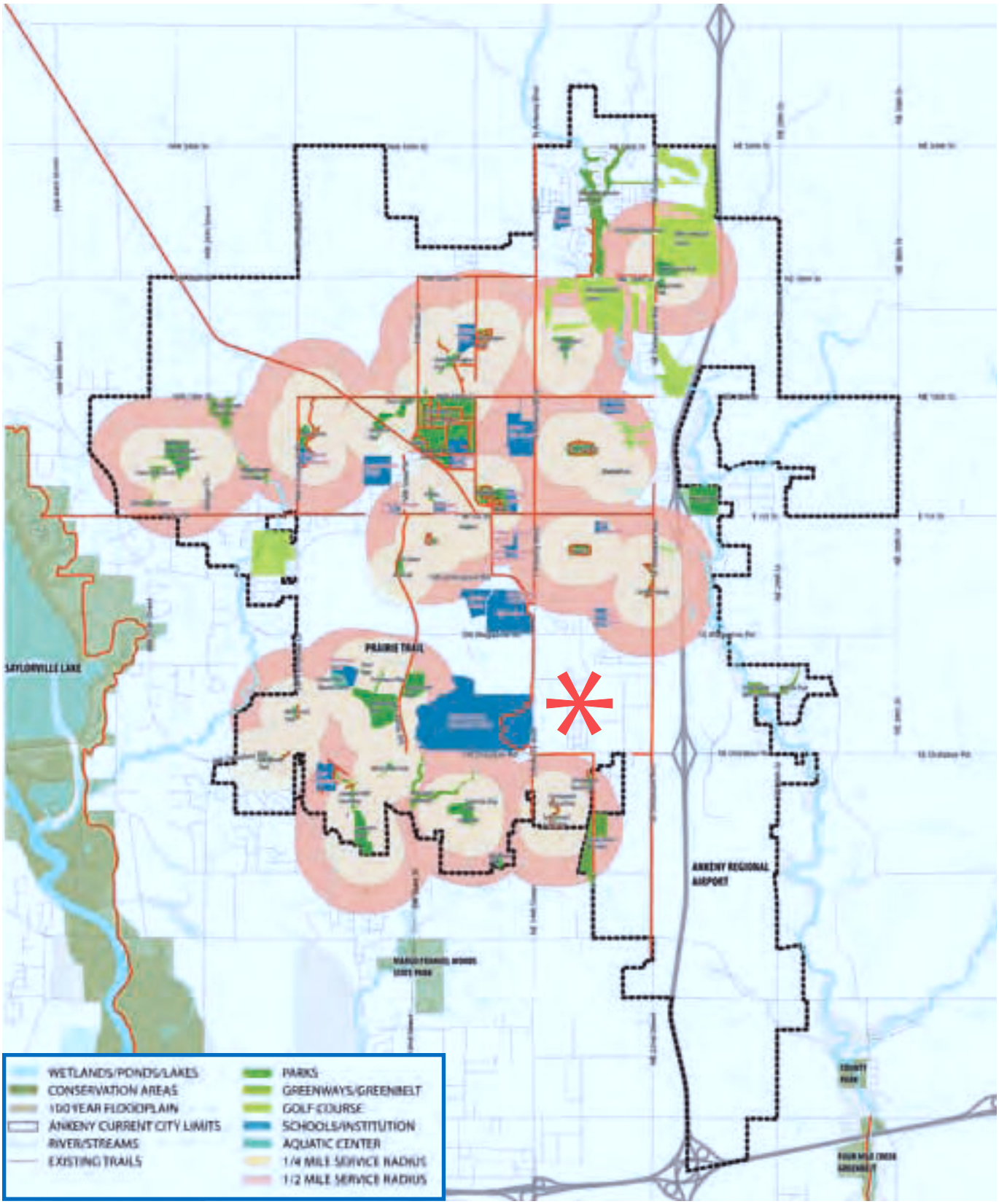


Figure 5.26: **South Ankeny Blvd. Development Concept**

FAITH BAPTIST COLLEGE NEIGHBORHOOD

Figure 5.27 depicts the existing land use in the Faith Baptist College Neighborhood, from NW State Street to both sides of NW College and from NW 9th Street to W First Street. As indicated on the graphic, this neighborhood includes a combination of institutional, single-family and multiple-family land uses.

The conversion of the shopping center at Sharmin Drive and West First to Baptist College use triggered a connection between that parcel and the College campus to the north. Some evidence of deteriorating building conditions, along with the previously-stated factors, indicate that this area may deserve further investigation as to its neighborhood change status. It is believed that in the neighborhood change hierarchy, this neighborhood should be designated as "Preserve and Enhance".

It is recommended that, in conjunction with the Baptist College and area property owners, a neighborhood plan be developed for this area. The components of the plan should include:

- A review of, and coordination with, the long-range Baptist College Campus Plan.
- An inventory of neighborhood building conditions.
- The development of neighborhood revitalization goals and strategies for the area.
- The identification of any infill redevelopment opportunity sites in the neighborhood.
- A determination of the appropriate role of the City in implementing the neighborhood plan.
- The identification of needed public improvements in the neighborhood.
- A review of zoning regulations and mapping of the neighborhood, to insure that development regulations are consistent with identified revitalization goals and strategies.

Figure 5.27: **Faith Baptist College Neighborhood**

CONCLUSION

- Preserve natural resource areas such as forests, wetlands, streams, and drainage ways. as long term community amenities.
- Preserve and maintain the vitality, quality and character of Ankeny's existing and future residential neighborhoods.
- Strengthen and support local businesses, offer opportunities for investment and facilitate economic prosperity with appropriate accommodation of commercial enterprises in the community.
- Provide attractive sites for future industrial and business park development..

6

PARKS AND TRAILS

Active use of outdoor recreational facilities is essential to maintaining Ankeny's quality of life. Residents enjoy access to good City and regional parks. Continued provision of excellent City parks and the expansion of the trails system are important to the City's future.

EXISTING PARKS AND TRAILS

Parks and natural resources within a community have both economic and humanistic attributes. Parks play an important role in establishing the city's image. They add value to the community, enhancing both the experience of living and value of property. Parks and open space help to provide structure for a growing community. The Park and Recreation Mission for Ankeny is to build a better City through clean and safe parks, quality recreation programs, connected trails and well-maintained facilities. However, maintaining the present level of service of high quality recreation facilities is a challenge when the city's population is projected to double in the next 25 years. With continued growth comes the need for continued investment in the park system.

The 2007 Parks & Facilities Comprehensive Plan consists of two components: 1) a "park planning analysis" of the community's park facilities and needs and; 2) a detailed parks facilities plan. Part of this comprehensive plan update process is to incorporate and update the "park planning analysis" component of the 2007 Parks & Facilities Comprehensive Plan (Parks Plan). To accomplish this, the goals and objectives identified in the Parks Plan continue to serve as the foundation for establishing future parks and recreation facilities in Ankeny. Those goals and objectives are therefore repeated here, as is an updated parkland sufficiency analysis. This chapter also presents a future parks and trails plan that will guide the City of Ankeny as it grows to ensure that a quality park and recreation system becomes an integral part of that growth.

ANKENY 2007 PARKS PLAN UPDATE

Introduction

The Ankeny Parks Plan provides a vision for future park development and clear direction to continue to provide excellent facilities to a rapidly growing community. The Plan presents a comprehensive look at the current state of the park system and develops a road map for future park improvements. It is a guide for the ongoing development of a comprehensive park system. The intent of the park planning process is to provide a green network that works as one complete system and integrates parks, open spaces, and trails at both the macro and micro level. Included in the Parks Plan is a comprehensive parks and trails plan that focuses on regional, community and neighborhood connections. The trails system provides both recreational and alternative transportation opportunities for both visitors and residents. The plan also recommends general locations for new parks and recreational facilities.

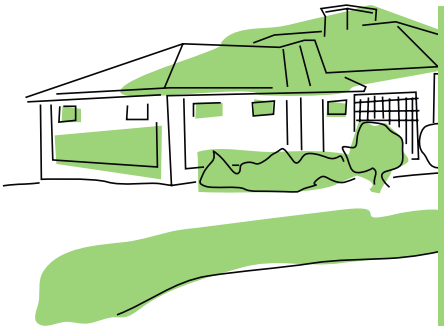
The 2007 park planning process included a survey completed by CD-DIAL, stakeholder meetings, public workshops and charrettes, and staff interviews. It also involved inventorying existing parks, open spaces and trails. The following park and recreation goals were formulated from an analysis of existing parks and public input received:

Park and Recreation Goals

Create a linked park network of greenways and civic streets that connect open spaces, neighborhoods, and activity centers.

- Develop a second aquatic facility that provides multi generational recreational opportunities.
- Provide recreational facilities to meet the needs of newly developing areas.
- Distribute active recreation use across the geographical area of the city, guarding against concentration of park resources in any single section of the city.
- Develop parks that provide greater flexible open spaces.
- Identify a location for a 30 to 40 acre community park.
- Provide an equitable mechanism for establishing service standards in growth areas and financing park acquisition and development.
- Balance active and passive recreation opportunities for all Ankeny residents.
- Use parks and open spaces to encourage neighborhood investment and to help to reinforce Ankeny's urban form.
- Develop a park system that promotes and supports a live, work, and play lifestyle.
- Connect Ankeny to regional trail system.

The Parks Plan examines the city's existing park and recreation system, covering all city-owned and operated recreation areas. The facilities are evaluated in terms of their classification, geographic distribution, level of service and national standards. The Plan identifies future park needs based on national standards and current community standards. Traditional park area standards set by the National



TRENDS AND KEY ISSUES

- Maintaining the present level of service of high quality recreation facilities is a challenge with the projected population growth.
- Ankeny's parks and natural resource system should be integrated into the city's development pattern and should provide recreational opportunities for all citizens.

Recreation and Park Association (NRPA) suggest ten acres of parkland per 1,000 residents. According to the Ankeny Parks Plan, with a jurisdictional population of 36,161 in 2005 (2005 Special Census), Ankeny contained about 25 acres of parkland (developed and undeveloped) per 1,000 residents. Excluding undeveloped parkland and special use parks, Ankeny contained about 13 acres of developed parkland per 1,000 residents, above the NRPA standard of ten acres per 1,000 residents. The City meets or exceeds national standards in total parkland.

The Parks Plan focuses on three primary facility classifications: Parks, Open Spaces and Trails and evaluates each category. The Plan presents conceptual park site plans identifying future enhancement opportunities for existing park facilities and future development opportunities for undeveloped parks. Master plans for all existing parks, open spaces and trail facilities were developed by the consultant design team working closely with city staff members. The planning effort also identified potential locations for future park facilities. The Plan includes analysis of existing facilities, programming, a conceptual master plan for each park, open space and trail system, and associated construction cost estimates for the enhancement of existing facilities and the development of new facilities.

Inventory Analysis

The 2007 Parks and Facilities Plan examined Ankeny's existing park and recreation system, covering all city-owned and operated recreation areas. The adequacy of park facilities is evaluated in four ways, as indicated below. The first three are updated in this document. The fourth remains in the 2007 Parks Plan, which continues to function as a Parks Facilities Plan.

1. Parks by Classification

Parks are classified into different categories to determine the level and area they serve. In addition, Ankeny's existing level of service is compared to similar Midwest communities.

2. Parks by Geographic Distribution

First, a comparative analysis is completed for each quadrant in the city, and second, the service radius of each park is analyzed to identify geographical gap in service.

3. Level of Service Analysis for Future Development

Existing parks are compared to future parkland needed for a projected 2030 population of 80,000. This 2030 projection is consistent with the 2035 projection incorporated into this comprehensive plan update (see Table 1.7). National standards for the provision of park and recreation facilities are applied to Ankeny's park system, here updated to reflect changes since 2007.

4. Inventory and Analysis of Park Facilities.

In the 2007 Parks Plan, existing facilities are listed, and challenges and opportunities are noted for each park.

1. PARKS BY CLASSIFICATION

In order to systematically analyze the park system, major recreation and open space areas within the city are classified as follows:

Overall Park Space

Total parkland (developed and undeveloped/dedicated) in the Ankeny planning area covers about 918 acres with developed parkland containing about 698 acres, or 76% of the total. Traditional park area standards set by the National Recreation and Park Association (NRPA) suggest ten acres of parkland per 1,000 residents. With a jurisdictional population of 36,161 in 2005 (2005 Special Census), Ankeny contains about 25 acres of parkland (developed and undeveloped) per 1,000 residents. Excluding undeveloped parkland, Ankeny contains about 19 acres of developed parkland per 1,000 residents, above the NRPA standard of ten acres per

2007 ANKENY PARKS AND FACILITIES COMPREHENSIVE PLAN

- The 2007 Ankeny Parks and Facilities Plan is a guide to the continued development of a comprehensive park system.
- Updates to the 2007 Parks and Facilities Comprehensive Plan include:
  - Otter Creek Park/Renaissance Park
  - Ankeny Dog Park/Somersby Park Expansion
  - Hawkeye Park Athletic Complex
  - Prairie Trail Aquatic Center, Cascade Falls
  - Prairie Ridge Sports Complex
  - Watercrest Park Addition

ANKENY EXISTING PARK TYPES

- Mini Parks
- Neighborhood Parks
- School Parks
- Community Parks
- Special Use Parks

1,000 residents. Excluding undeveloped parkland and special use parks, Ankeny contains about 11 acres of developed parkland per 1,000 residents.

Standards developed by the NRPA to evaluate the current level of park service should only be considered general recommendations in regard to the service needs of a community. Present standard practice suggests that a community should evaluate the current level of park service and define a level of future park service that is deemed appropriate. The park classification system developed by the NRPA is used to classify Ankeny's parks; park categories include:

Mini-Parks

The development of a mini-park is generally done to remedy a specific recreation or open space need. These parks typically cover less than one acre and have a service radius of ¼ mile or less. Because of maintenance difficulties with multiple smaller sites and their small service area, most cities discourage the development of mini-parks. While Ankeny currently has thirteen mini parks (including planned parks), nine of which are developed, including: Village, Westside, Greentree, Michael, Haubert, Glenbrook, Dean, Precedence and White Birch Parks; the city should plan for limited future mini-park development. Existing mini-parks in Ankeny total about 22 acres.

Neighborhood Parks

Neighborhood parks are considered the basic unit of Ankeny's park system, providing a recreational and social focus for residential areas. These parks provide desirable space for informal active recreation (playgrounds, large flexible open space, trail access, and shelters) and passive recreational activities (bird watching, hiking, picnicking). Presently Ankeny contains thirteen developed neighborhood parks, which is about 155 acres of neighborhood parkland.

The typical service radius for neighborhood parks is between ¼ and ½ mile, or about a fifteen minute walk. Neighborhood parks adequate in size to accommodate the requisite facilities often contain at least five acres. Between ten and fifteen acres is considered optimal. NRPA standards call for between one and two acres of neighborhood parkland per 1,000 residents. Ankeny currently has about 230 acres of neighborhood parks (developed and undeveloped), which translates into about six acres per 1,000 residents. Of the total 230 acres of neighborhood parkland, about 67 percent is developed.

School Parks

School facilities can help to meet neighborhood park needs, particularly when located in areas not served by a neighborhood park. The grounds of Ankeny's elementary schools often function as neighborhood parks, however, they are not considered in the parkland area analysis.

Community Parks

These typically include areas of diverse use and environmental quality. Such parks meet community-based recreation needs, may preserve significant natural areas, and often include areas suited for intense recreation facilities. Typical criteria for community parks include:

Adequate size to accommodate activities associated with neighborhood parks, but with space for additional activity.

A special attraction that draws people from a larger area, such as a pond or lake, ice skating rink, trails, special environmental or cultural features, or specialized sports complexes.

Community parks generally contain between 30 and 50 acres and serve a variety of needs. Traditional NRPA guidelines for community park areas call for five to eight acres per 1,000 residents. The typical service radius of a community park is approximately ½ mile to three miles. Ankeny's only existing community park is Hawkeye Park, a fully developed 17.8 acre park, located in the northwest quadrant of the community.

Ankeny Parks and Recreation department is looking at the possibility of expanding the existing Watercrest Park by adding another 10-15 acres north of the current park. This addition doubles the size of the existing park with about 25-30 total acres and provides the opportunity to establish a community park in the Northwest part of town. Ankeny also has an undeveloped community park (Community Park at Prairie Trail) planned for the southwest quadrant of the city that equal approximately 46.3 acres. With about 2.3 acres per 1,000 residents (developed and undeveloped community parks), Ankeny does not currently satisfy the NRPA standard for community parks.

Special Use Parks

These cover a broad range of facilities oriented toward a single use, including cultural or social sites and specialized facilities. In Ankeny, this category includes the following facilities: Prairie Ridge Center, the Outdoor Educational Center (Izaac Walton), Ankeny City Hall and Wagner Park, the Prairie Ridge Aquatic Center and Skate Park, the Art Center, the Kirkendall Library grounds, additional aquatics facility (Cascade Falls), undeveloped Saylor Creek Park, and Heritage Park.

Table 6.1 summarizes Ankeny's city parks and their facilities. Figure 6.1 displays the location of each park and school.

Table 6.1 Ankeny Parks

Growth Area	MINI PARKS		NEIGHBORHOOD PARK		COMMUNITY PARKS		UNDEVELOPED		SPECIAL USE PARKS		OPENSPACE/ GREENWAY		TOTAL DEVEL-OPED	TOTAL DEVEL. & UNDEVE-LOPED
Northwest (Pop. 11,455)	**Total**	**8.0**		**45.8**		**17.8**		**21**		**139**		**85.5**	**296 AC**	**317 AC**
	Village Park	2.4	Georgetown Park	17.2	Hawkeye Park	17.8			Ankeny City Hall and Wagner Park	4.8	Horizon Park	8		
	Westside Park	0.4	North Creek Park	16.5					Aquatic Center and Skate Park	2.5	Hidden Creek Greenway	37.4		
	Greentree Prairie Lakes Park (Mini)	5.2	Ashland Meadows	12.1					Art Center	11.2	Boulder Brook Greenway	6.5		
							Watercrest Park (Future Neighb + Community)	21	Kirkendall	5.2	Prairie Lake Greenway	17.5		
									Prairie Ridge Center	115	Cherry Glen Greenway	16.1		
Northeast (Pop. 7,973)		**2.1**		**36.2**		**0**		**0**		**48.1**		**112**	**199 AC**	**199 AC**
	Michael Park	2.1	Crestbruck Park	16.8					Outdoor Educati onal Center - Izaak Walton	12	Wood-land Reserve/ Four Mile Creek	108		
			Otter Creek Park	9.4					Heritage Park	36.1	Renaiss-ance Park	4.5		
			Briarwood Park	10										

Figure 6.1: Existing Parks, Greenways and Trails, Ankeny

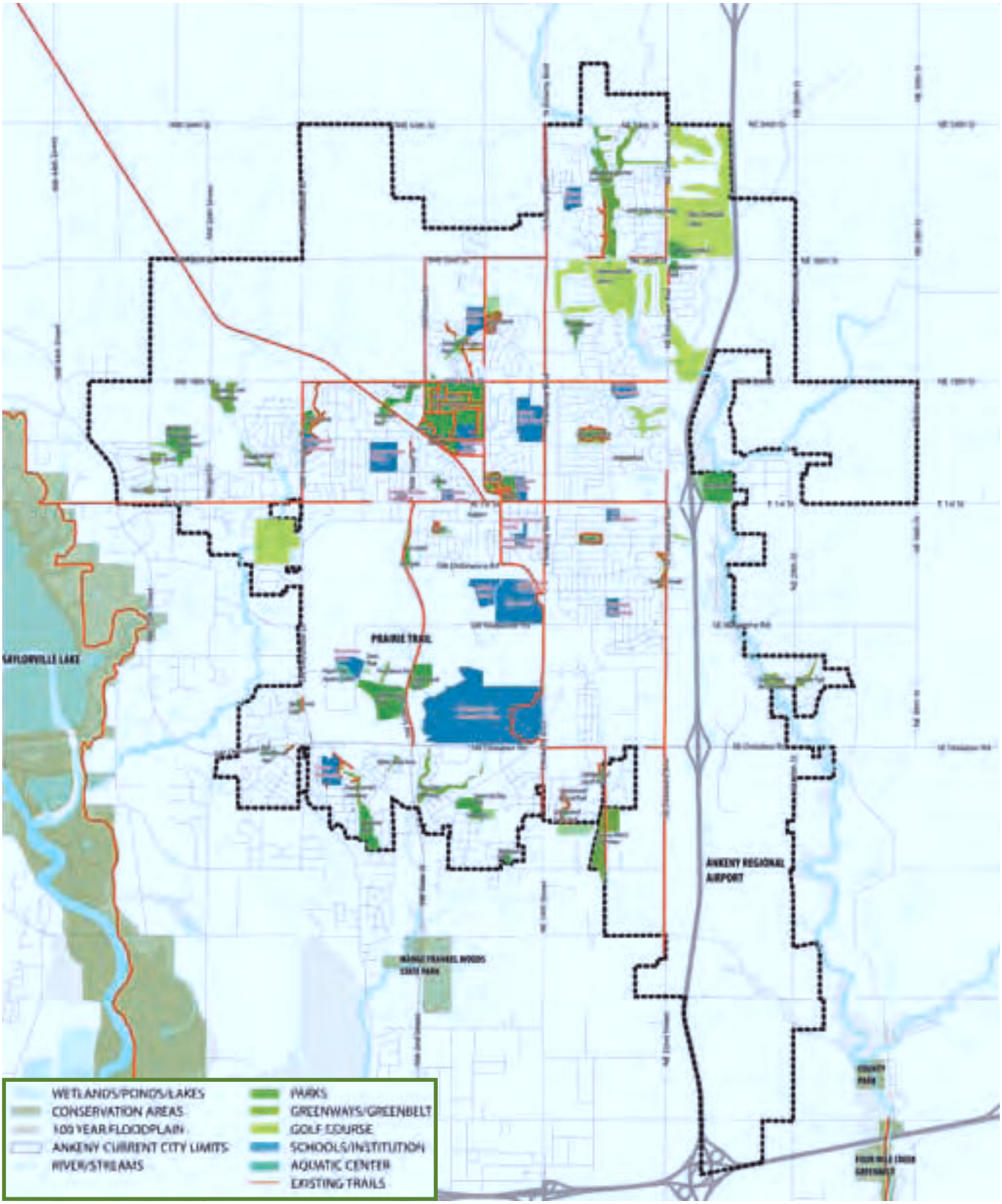


Table 6.1 **Ankeny Parks Continued**

Growth Area	MINI PARKS		NEIGHBORHOOD PARK		COMMUNITY PARKS	UNDEVELOPED		SPECIAL USE PARKS		OPENSPACE/ GREENWAY		TOTAL DEVEL-OPED	TOTAL DEVEL. & UNDEVE-LOPED
Southeast (Pop. 9,281)	**Total**	**0**		**17.6**	**0**		**24**		**0**		**66.7**	**84.4**	**108.4**
			Sunrise Park	10.4		Springwood South/ Central Park	24			Carney Marsh	36.8		
			Summer-brook	7.2						Clover Ridge West	10.1		
										Hillside Park	16.5		
										Spring-wood Park North	3.3		
Southwest (Pop. 7,452)	**Total**	**11.6**		**55.7**	**0**		**185.1**		**10**		**32**	**109.3**	**294.4**
	Haubert Park	0.9	West-winds Park	3.3		Prairie Trail (Community)	46.3	Prairie Trail Aquatic Center	10.0	Twin Gates / Highpoint	21.2		
	Glen-brook Park	4.2	Sunset Park	7.4		Prairie Trail Greens System	80.8			Wildflower Park	3.2		
	Dean Park	1.3	Somersby Siena Hills Park	11		Future - 3 Parks @ Prairie Trail (Mini)	9			Diamond Hills	7.6		
	Preced-ence Park	2.6	Dog Park/ Somersby Prairie Park	12		Future - 2 Parks @ Prairie Trail (Neighb)	30						
	White Birch Park	2.6	Sawgrass Park	22		Saylor Creek Park (Special Use)	19						
Total		**21.7**		**155.3**	**17.8**		**230.2**		**197**		**296.9**	**698.6**	**918.8**

Parkland Area Comparision to Similar Communities

In addition to using the NRPA standards to evaluate levels of service in a community, current park planning literature suggests conducting a comparison between the study community (in this case Ankeny) and similar communities. This technique allows Ankeny to evaluate its standing in relation to cities that have similar demographic, housing, economic, and growth characteristics.

Table 6.2 displays the existing parkland and open space level of service for Ankeny and nineteen similar Midwest cities. 2005 Census estimates were used to calculate acres per 1,000 residents, except in the case of Ankeny which uses the 2005 Special Census figures. Regarding level of service per 1,000 residents, Ankeny is similar to Urbandale, IA, Lakeville, MN, and West Des Moines, IA. Golf courses were not included in the calculation of total parkland and open space.

The conclusion of this comparison is that Ankeny, while exceeding general NRPA standards, is about average when compared to similar communities with regard to parkland/open space acres per 1,000 residents. Therefore, current Ankeny parkland level of service is recommended for projecting future parkland needs.

2. PARKS BY GEOGRAPHIC DISTRIBUTION

In discussing park and recreation facilities, the city of Ankeny often refers to quadrants (service areas) created by the bisection of the city by two of Ankeny's primary arterial streets, Ankeny Boulevard and 1st Street. Dividing the city into quadrants allows for a comparative analysis between quadrants, and may also indicate other geographical differences in park facilities (i.e. between the north and south or east and west portions of the city). The four areas of analysis include:

- The Northwest Quadrant, including neighborhoods north of 1st Street and west of Ankeny Boulevard.
- The Northeast Quadrant, including neighborhoods north of 1st Street and east of Ankeny Boulevard.
- The Southwest Quadrant, including neighborhoods south of 1st Street and west of Ankeny Boulevard.

Table 6.2 **Community Comparison, Parkland per 1,000 Residents**

City	State	1990 Population	2000 Population	2005 Population (Census Estimate)	Total Parkland and Open Space (Acres)	Acres per 1,000 Residents
Lakeville	Minnesota	24,854	43,128	51,484	1,363	26
Ankeny	Iowa	18,482	27,117	36,161*	698	19**
Urbandale	Iowa	23,500	29,072	34,696	857	25
West Des Moines	Iowa	31,702	46,403	52,768	1,200	23
Andover	Minnesota	15,216	26,588	29,745	542	18
New Berlin	Wisconsin	33,592	38,220	38,547	668	17
Liberty	Missouri	20,459	26,232	29,042	501	17
Mundelein	Illinois	21,215	30,935	32,774	493	15
Salina	Kansas	42,303	45,679	47,000*	640	14
Johnston	Iowa	4,702	8,649	12,931	170	13
Apple Valley	Minnesota	34,598	45,527	49,856	633	13
Papillion	Nebraska	10,372	16,363	20,431	223	11
Lenexa	Kansas	34,034	40,238	43,434	467	11
Overland Park	Kansas	111,790	149,080	164,811	1,528	9
Shawnee	Kansas	37,993	47,996	57,628	517	9
Marion	Iowa	20,403	26,294	30,233	234	8
Algonquin	Illinois	11,663	23,267	29,022	191	7
Leawood	Kansas	19,693	27,656	30,145	156	5
Ballwin	Missouri	21,816	31,283	30,481	143	5
Chesterfield	Missouri	37,991	46,802	47,020	200	4

Source: RDG Planning and Design, and all communities listed in the table

** Using the 2008 US Census Estimate of 42,287 for Ankeny, the acre per 1,000 residents decrease to 16

- The Southeast Quadrant, including neighborhoods south of 1st Street and east of Ankeny Boulevard.

Overall

In regards to the total amount of parkland (developed and undeveloped parkland), service ratios vary among the four quadrants. The northwest service area (population of 11,455) contains about 317 acres of parkland, or twenty-seven acres per 1,000 residents. The northeast service area (population of 7,973) contains about 199 acres of parkland, or twenty-five acres per 1,000 residents. The southeast service area (population of 9,281) contains about 108 acres of parkland, or eleven acres per 1,000 residents and the southwest service area (population of 7,452) contains about 294 acres of parkland, or thirty-nine acres per 1,000 residents. Table 6.3 displays the existing distribution of parkland in Ankeny.

The differences in developed parkland vary slightly between the areas. The northwest service area contains the greatest amount of total developed parkland with about 296 acres, or twenty-six acres per 1,000 residents. The northeast service area contains about 199 acres of developed parkland, or twenty-five acres per 1,000 residents. The southeast service area contains about 84 acres of developed parkland, or nine acres per 1,000 residents and the southwest areas contain about 109 acres, or fourteen acres per 1,000 residents respectively.

The disparity in total parkland between quadrants is understandable. For example, Prairie Ridge Sports Complex is in the northwest quadrant, increasing that areas' overall park space. The southwest quadrant has a large amount of undeveloped parkland in both greenways and the Prairie Trail development. Also, the southeast quadrant has seen the least development of all the quadrants and lags behind in terms of both total and developed parkland. This approach of quadrant analysis is insufficient because the outlying areas of each quadrant vary considerably in the rate and amount of projected new development. For this reason, the Parks plan presents a more specific analysis of community and neighborhood park service areas. However, the quadrant analysis is useful if only to provide a point-in-time park status report by these commonly-referenced community sub areas.

Community Parks

Hawkeye Park, a 17.8 acre Community Park, gives the northwest service area 1.5 acres of Community Park per 1,000 residents. The Parks department is looking at the possibility of expanding the existing Watercrest Park to about 25-30 total acres and establish a community park. The southwest service area has a planned Community Park in Prairie Trail that is currently undeveloped totaling about 46 acres, which gives that service area 6.2 acres of Community Park per 1,000 residents. Presently areas of southeast and northeast Ankeny do not contain any developed or undeveloped community parks; all areas of the city need additional community parkland based on NRPA standards.

The differences between areas in community parkland are not considered as important as differences in neighborhood parkland because community parks are intended to serve, by their very nature, a community wide purpose. Community parks may serve a dual function as neighborhood parks, provided they include typical neighborhood park facilities.

Neighborhood Parks

The northwest service area contains about 57 acres of neighborhood parkland, or about 5 acres per 1,000 residents. The northeast service area contains about 36 acres, or about 4.5 acres per 1,000 residents. The southeast service area contains about 25 acres, or 2.7 acres per 1,000 residents. And the southwest service area contains about 56 acres, or about 7.4 acres per 1,000 residents. All areas of the city exceed the existing total neighborhood parkland (developed plus undeveloped) needed based on NRPA standards.

a. Crestbruck Park; b. Glenbrooke Park; c. Prairie Ridge Aquatic Center; d. Bandshell

Although there are existing differences between the service areas' community and neighborhood developed parkland, it is anticipated that current gaps in service will substantially decrease as soon as the dedicated parks in the south are developed (especially those contained in the Prairie Trail neighborhood).

The distribution of Ankeny's developed and total (developed and undeveloped) parkland can be viewed in Table 6.3.

Parks Service Area Analysis

Thus far, the above section has focused on a comparative geographic parkland analysis of Ankeny. The next step is to identify service area gaps within the city limits.

Geographic neighborhood park service can be evaluated using the NRPA standard of a ¼ mile service radius (extending from the park boundary) for neighborhood parks. A ½ mile radius is typically added to depict the outer service area of neighborhood parks. As previously mentioned, community parks also may serve a function as neighborhood parks and are subsequently included in the analysis. The park service area analysis identifies any service gaps for developed parkland and total (developed plus undeveloped) parkland, allowing conclusions to be drawn in regards to existing, near future (5-10 years), and long-term (10+ years) gaps in park service. The time frames are

Table 6.3 **Existing Parkland Distribution, Ankeny**

	Developed Parkland			Developed + Undeveloped Parkland			
Park Type	**Existing Acreage**	**Existing Acres per 1,000 Residents**	**Existing Acres Need based on NRPA**	**Existing Acreage**	**Existing Acres per 1,000 Residents**	**Existing Acres Need based on NRPA**	**% Developed**
Northwest (Pop. 11,455)	**71.6**	**6.1**	**114.6**	**92.6**	**8.0**	**114.6**	**77%**
Community: NRPA = 8 acres/1,000 pop	17.8	1.5	91.6	17.8	1.5	91.6	
Neighborhood: NRPA = 2 acres/1,000 pop	45.8	3.9	22.9	66.8	5.8	22.9	
Mini	8.0	0.7	n/a	8.0	0.7	n/a	
Northeast (pop. 7,973)	**38.3**	**4.7**	**79.7**	**38.3**	**4.7**	**79.7**	**100%**
Community	n/a	n/a	63.8	n/a	n/a	63.8	
Neighborhood	36.2	4.5	15.9	36.2	4.5	15.9	
Mini	2.1	0.2	n/a	2.1	0.2	n/a	
Southeast (pop. 9,281)	**17.6**	**1.9**	**92.8**	**41.7**	**4.5**	**92.8**	**42%**
Community	n/a	n/a	74.2	n/a	n/a	74.2	
Neighborhood	17.6	1.9	18.6	41.7	4.5	18.6	
Mini	n/a	n/a	n/a	n/a	n/a	n/a	
Southwest (Pop. 7452)	**67.1**	**9.0**	**74.5**	**152.6**	**20.4**	**74.5**	
Community	n/a	n/a	59.6	46.3	6.2	59.6	
Neighborhood	55.5	7.5	14.9	85.7	11.5	14.9	
Mini	11.6	1.5	n/a	20.6	2.7	n/a	
Total Community (pop. 36,161)	**17.8**	**0.5**	**289.3**	**64.1**	**1.8**	**289.3**	**28%**
Total Neighborhood (pop 36,161)	**155.3**	**4.2**	**72.3**	**230.4**	**6.3**	**72.3**	**68%**
Total Park and Recreation Area (excludes mini-park) (Pop. 36,161)	**173**	**4.7 (NRPA Standard = 10)**	**361.6**	**294.5**	**8.1 (NRPA Standard = 10)**	**361.6**	**58%**

Source: RDG Planning & Design

chosen based on the assumption that if no new parks were added to the system it would be about 10 years for all currently dedicated parks to be fully developed.

Figure 6.2 illustrates ¼ and ½ mile service radii for all the existing (developed and undeveloped) parks. A ¼ mile service boundary is drawn around all the mini, neighborhood and community parks. A ½ mile service boundary is drawn around the neighborhood and community parks.

Total Parkland (Developed and Undeveloped)

Developed areas of Ankeny that lack adequate developed community and neighborhood parks include:

- A large area east of S. Ankeny Boulevard and south of Magazine Road.
- West of Irvindale Drive and south of 5th Street.
- A small area roughly bordered by 28th Street, 18th Street, and west of Delaware Avenue.
- North of 47th Street, east of Fourmile Creek.
- North of 36th Street and west of Fourmile Creek.

Thus, while all quadrants of the city have undeveloped parklands, this analysis indicates that north Ankeny (north of 36th Street/west of Fourmile Creek and north of 47th Street/east of Fourmile Creek) is the area most in need of neighborhood parks to serve existing residents. Also, as would be expected, the growth areas of Ankeny will need to provide new neighborhood parks to serve their residents as they develop.

Physical barriers, such as major roads, drainage ways, or large industrial areas, can isolate certain residential areas from parks that may appear to serve them. Although not all areas mentioned above are strictly designated residential, it is important to identify areas lacking parkland in an effort to discover major gaps or barriers in the city's greenway system.

3. LEVEL OF SERVICE ANALYSIS FOR FUTURE DEVELOPMENT

Table 6.4 identifies the future park needs for Ankeny's future population based on national standards. According to the 2005 Ankeny Special Census, the Ankeny planning jurisdiction has 36,161 residents. Ankeny's 2030 population was projected to be 80,000 in the 2007 Parks Plan. This 2030 population number is consistent with the 2035 population projection incorporated into this comprehensive plan update.

As previously indicated, Ankeny's current community park level of service (total) is 0.5 acres per 1,000, which is significantly below the NRPA standard of five to eight acres per 1,000. As indicated in Table 6.4, if Ankeny were to continue at this rate of growth in community parks, there would be no need for additional acres between now and 2030. If community park level of service were increased to eight acres per 1,000, about an additional 555 acres would be needed to be dedicated.

Ankeny's current neighborhood park level of service (total) is approximately 4.2 acres per 1,000 residents. This amount satisfies the NRPA benchmark of 1 to 2 acres per 1,000. As indicated on Table 3.4, if Ankeny were to continue at this rate of growth in neighborhood parks, there would need to be an additional 105 acres dedicated between now and 2030. If the neighborhood park level of service was strictly regulated to 2 acres per 1,000, there would be no additional need for neighborhood park land.

Ankeny's total neighborhood park acreage figure is largely due to the integration of parkland and storm water management facilities in recent years. This integration, which has already been described as positive, leads to a much larger acreage figure for neighborhood parks, in this case 4.7 acres per 1,000 population. This figure is representative of future parkland needs only to the extent that this integration of parks and storm water facilities continues and that future area of

EXISTING PARKS TRENDS

- Total parkland (developed and undeveloped/dedicated) in the Ankeny planning area covers about 918 acres.
- Developed parkland contains about 698 acres, or 76% of the total.
- Traditional park area standards set by the National Recreation and Park Association (NRPA) suggest ten acres of parkland per 1,000 residents.
- With a population of 36,161 in 2005 (2005 Special Census), Ankeny contains about 25 acres of parkland (developed and undeveloped) per 1,000 residents.
- Excluding undeveloped parkland, Ankeny contains about 19 acres of developed parkland per 1,000 residents, above the NRPA standard of ten acres per 1,000 residents.
- Excluding undeveloped parkland and special use parks, Ankeny contains about 11 acres of developed parkland per 1,000 residents.
- Ankeny's current community park level of service (total) is 0.5 acres per 1,000, which is significantly below the NRPA standard of five to eight acres.

Figure 6.2: **Existing Neighborhood Park Service Areas, Ankeny**

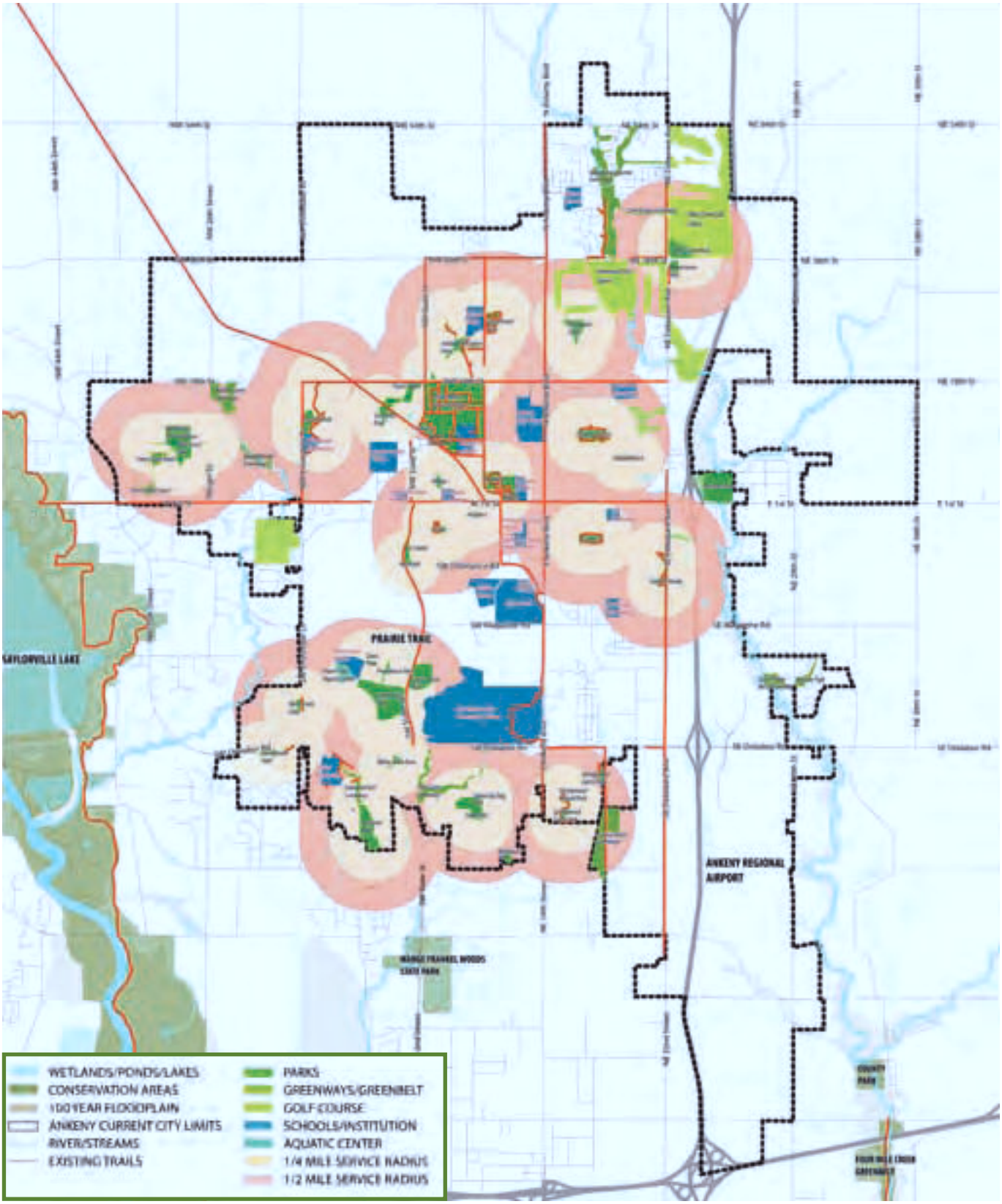


Table 6.4 **Future Parkland Needs, Ankeny 2030**

	Developed Parkland			Developed+Undeveloped Parkland			Future Need			
Park Type	Existing Acreage	Existing Acres per 1,000 Residents	Existing Acres need based on NRPA	Existing Acreage	Existing Acres per 1,000 Residents	Existing Need based on NRPA	Future Parkland Need: NRPA Stamdards	Additional Dedication Need: NRPA Stamdards	Future Parkland Need: Existing Standards	Additional Dedication Need: Existing Standards
Total Community	17.8	0.5	289.3	64.1	1.8	289.3	640	554.9	40	(-24.1)
Total Neighborhood	155.3	4.2	72.3	230.4	6.3	72.3	160	(-47.2)	336	105.6
Total Park & Recreation Area (excludes Mini Parks)	**173**	**4.7**	**361.6**	**294.5**	**8.1**	**361.6**	**800**	**507.7**	**376**	**81.5**

Source: RDG Planning and Design

Ankeny reflects similar drainage patterns as these areas recently developed.

Between now and 2030, population growth trends, land constraints, and level of demand for parks and recreation will guide parkland dedication strategies, and subsequently affect the park and recreation service levels in Ankeny.

Community Parks

Community parks typically include areas of diverse use and environmental quality. These parks meet community-based recreation needs, may preserve significant natural areas and often include areas suited for intense recreational facilities. Typical criteria for community parks include:

- Adequate size to accommodate activities associated with neighborhood parks, but with space for additional activity.
- A special attraction that draws people from a larger area, such as a pond or lake, ice skating rink, trails, special environmental or cultural features, or specialized sports complexes.

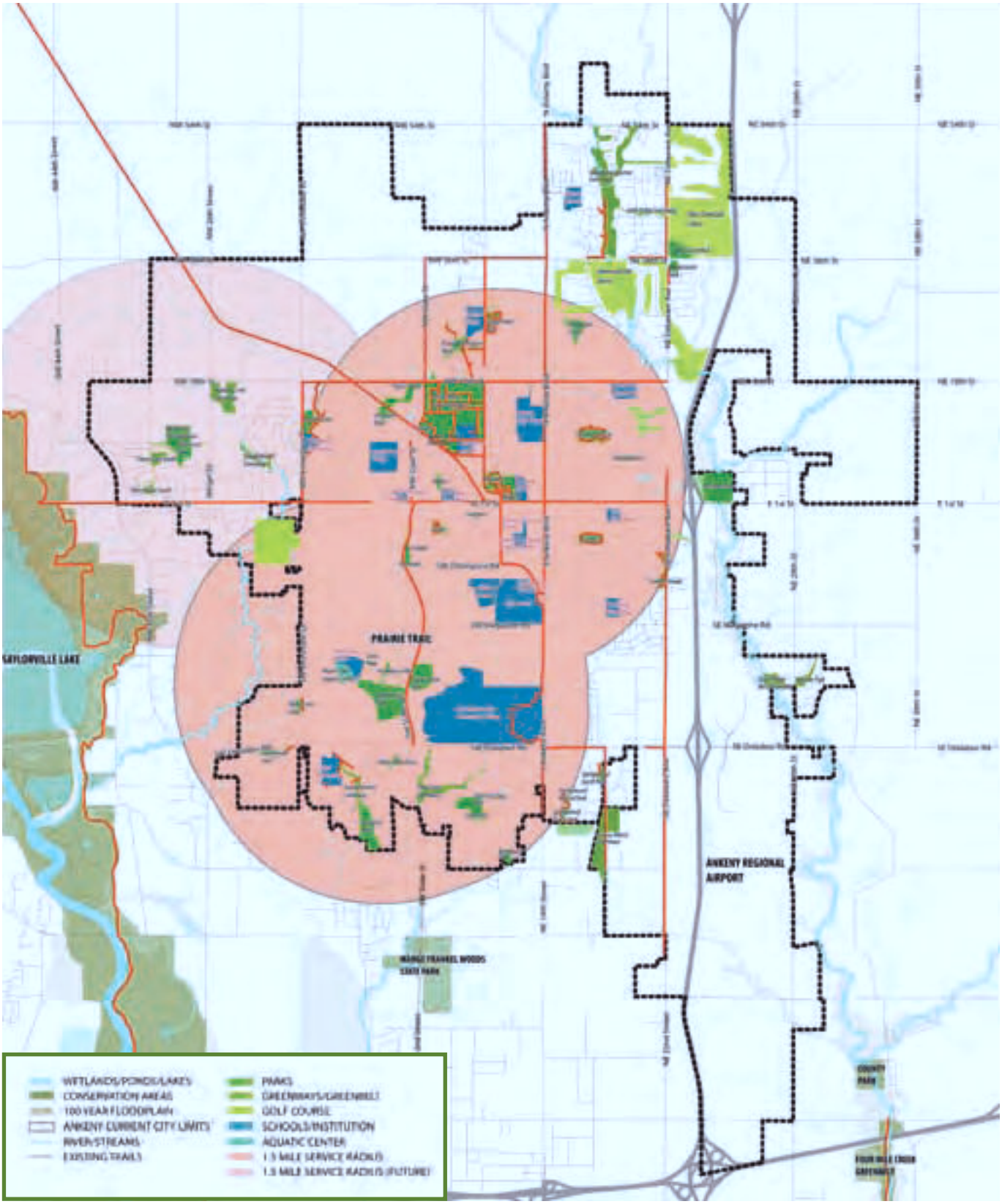
Community parks generally contain between 20 and 50 acres and serve a variety of needs.

Hawkeye Park is the only existing community park in Ankeny. It is a fully developed 17.8 acre park, located in the northwest quadrant of the community. Ankeny also has an undeveloped community park (Community Park at Prairie Trail) planned for the southwest quadrant of the city that equal approximately 46.3 acres. With about 1.8 acres per 1,000 residents (Hawkeye Park and Community Park at Prairie Trail), Ankeny does not currently satisfy the NRPA standard for community parks. Typical service radius of a community park is approximately ½ mile to three miles. Figure 6.3 illustrates 1½ mile service radii for the existing Hawkeye community park and the Prairie Trail community park.

Ankeny Parks and Recreation department is also considering the possibility of expanding the existing Watercrest Park by adding another 10-15 acres north of the current park. This addition doubles the size of the existing park with about 25-30 total acres and provides the opportunity to establish a community park in the Northwest part of town. The west side could be served well with an additional community park and Watercrest is strategically located to accommodate this need.

Deficiencies in community parks facilities will continue as Ankeny continues to grow to the north and east, across Interstate 35. Opportunities to collaborate with the Ankeny School District on meeting these park needs in conjunction with new school development should be pursued.

Figure 6.2: **Community Parks Service Areas, Ankeny**



FUTURE PARKS AND TRAILS

The well being of the people in a community is dependent upon educational, recreational and social opportunities. Parks and recreation is essential to the quality-of-life enjoyed by people of all ages in the community. City parks and open space not only improve our physical health but also strengthens our communities and neighborhoods by making them more attractive places to live and work. Parks and open space have been shown to increase the property values in adjoining residential areas. The availability of park and recreation facilities is an important quality-of-life factor for people in choosing where to live. Continued development of parks and recreation facilities is necessary to accommodate a changing and growing population in the community.

Open space conservation is an essential component of a sustainable community. Ankeny must strive for a balance between nature and development. Sustainability principles indicate that natural drainage areas should be allowed to perform their environmental function of water infiltration and conveyance. In this manner, downstream drainage and erosion problems can be minimized. At the same time, greenways and natural drainage areas can be used to increase connectivity between neighborhoods, activity centers and regional facilities. Most successful neighborhoods incorporate and offer easy access to parks, playgrounds, trails, greenways and natural open space. Chapter 5, Section I. Development Principles describes the neighborhood model of development and how parks and open space should be integrated with land use. It is essential for a community to understand the new role of parks, open space, trails and quality of life in attracting residents, businesses, and economic activity to communities.

The components of this Section include:

- Greenways/bluebelts
- Park System Expansion with Growth
- Trails
- Growth Area Parks and Trails Concepts
- Existing Park Site Improvements
- Neighborhood Park Financing

GREENWAYS/BLUEBELTS:

The 2007 Parks Plan identified the benefits to the community of greenway and open space preservation and presented improvement plans for eleven greenway segments in Ankeny. These eleven specified greenways are:

- Boulder Brook Greenway
- Carney Marsh Greenway
- Diamond Hills Greenway'
- Horizon Greenway
- Hillside Greenway
- Springwood North Greenway
- Twin Gates Greenway – Highpoint'
- Wildflower Greenway
- Woodland Reserve Greenway
- Clover Ridge Greenway
- Hidden Creek Greenway

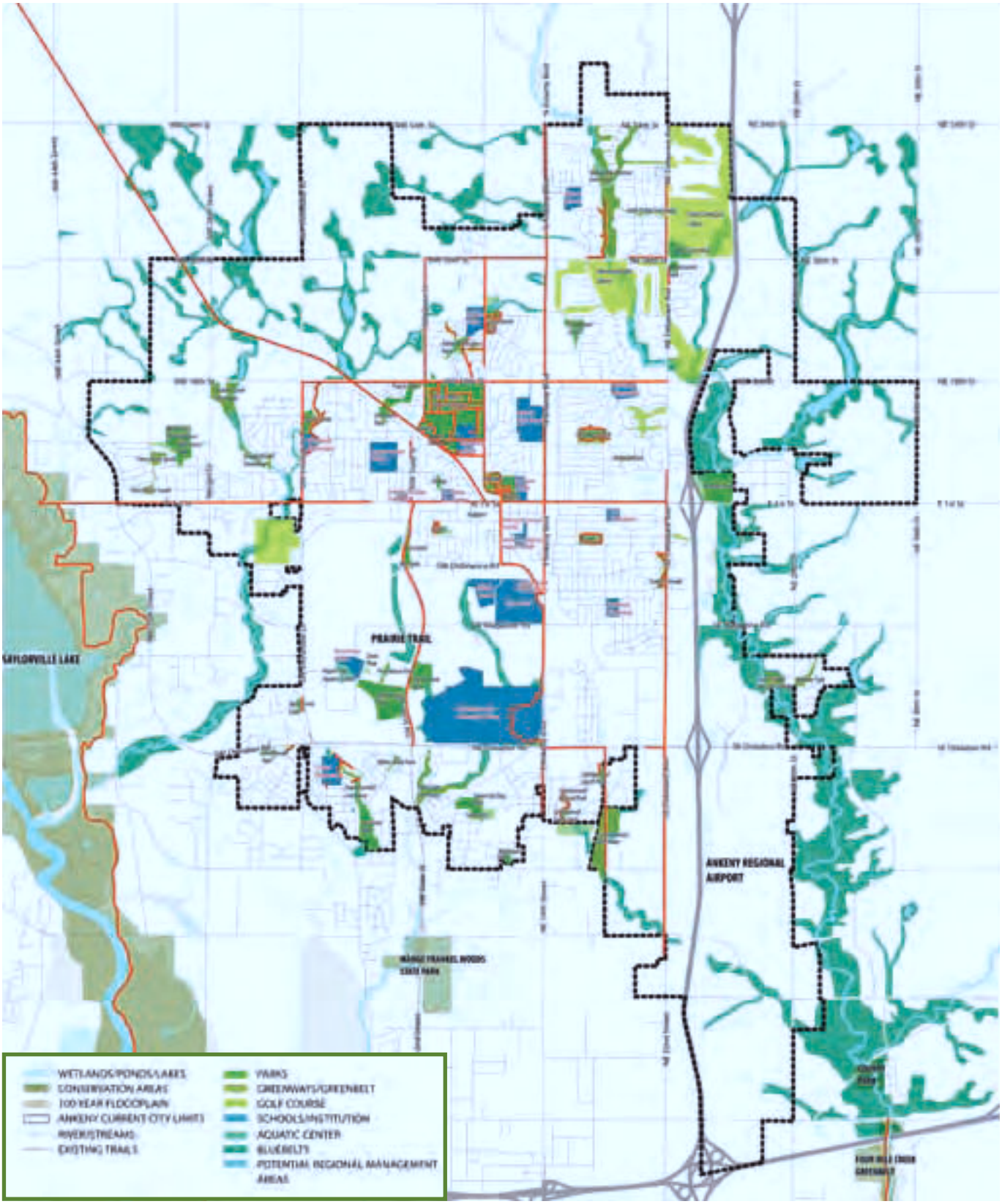
In addition to presenting improvement plans for these short greenway segments, the 2007 Parks Plan made general recommendations regarding the preservation of the major drainageway corridors in Ankeny. This Comprehensive Plan Update furthers these Parks Plan recommendations by including a detailed focus on preservation of natural drainageways, called "bluebelts). Specifically, Chapter 4: Environmental and Stormwater Considerations presents a detailed analysis of Ankeny growth area hydrology and recommends policies, including preservation, for the various identified stream classifications.

Figure 6.4 depicts the Growth Area Bluebelts, which are recommended for protection as open space in Chapter 4: Environmental and Stormwater Considerations, and are incorporated into future development concepts in Chapter 5: Future Land Use Plan. These conservation areas include creek basins, floodplains, drainage ways, wetlands, high slopes and

TRENDS AND KEY ISSUES

- Ankeny should attempt to protect open space as a way of supporting local economies and guiding growth into more densely settled multiuse, pedestrian friendly neighborhoods.
- Preservation of unique natural resources is accomplished by the establishment of linear green corridors/greenways as these continuous corridors efficiently accommodate the collection, movement and/ or infiltration of water.
- Such stream corridors/green corridors are conserved by the future parks plan as an extensive open space network system. In some places, such corridors are combined with future parks to create large recreation areas. Recreational trails are also integrated into the network where appropriate.
- A comprehensive trails system proposed for Ankeny includes different types of trails connecting existing and proposed parks with residential growth centers and major facilities., the regional trail system, and metro tourism and recreational amenities.

Figure 6.4: **Existing Parks and Trails with Growth Area Bluebelts, Ankeny**



other environmentally sensitive areas. As detailed in Chapter 4, these bluebelts constitute a system of linear green corridors/greenways that can efficiently accommodate the collection, conveyance and/or infiltration of water. They also provide important wildlife habitat and movement corridors.

Existing trails are also depicted on Figure 6.4 and that map illustrates that most of those trails follow street corridors. However, as growth occurs the bluebelts clearly can become linkages between City-owned parks, trails, open spaces, schools, and other City amenities and can provide diverse and unique recreational opportunities within the City. The bluebelts can become the green open space that is a vital component of the "neighborhood model" of development detailed in Chapter 5, Section I: Development Principles.

EXPANSION OF PARKS SYSTEM WITH GROWTH

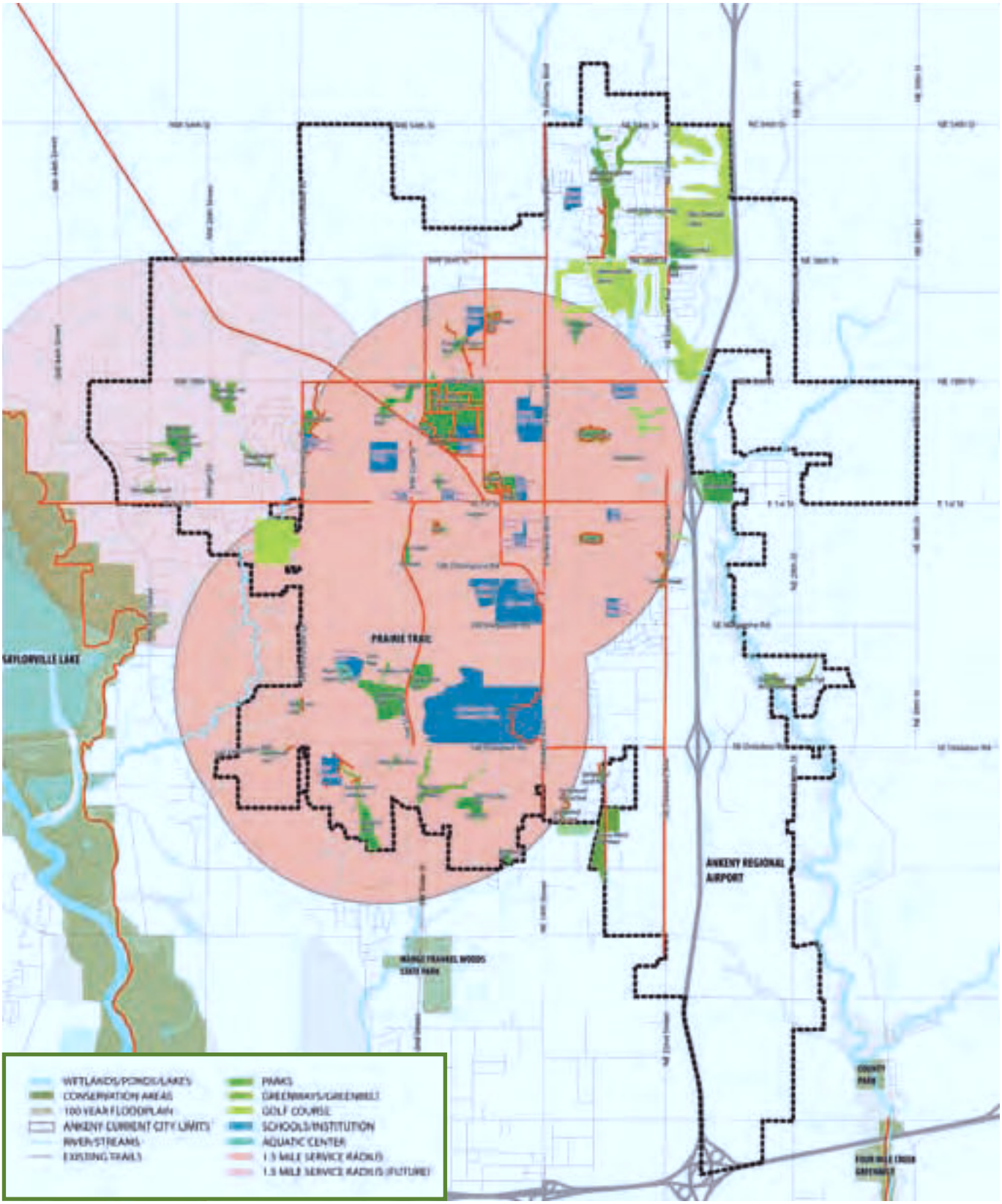
Ankeny will need to provide new park and open space areas as growth occurs in order to maintain the community's high level of park service. This need is documented in the Parks Plan. In growth areas, Ankeny should provide both neighborhood and community parks, as well as other recreational experiences, such as nature interpretation, resource conservation, trail systems, and other passive activities. It is vitally important to identify quality parkland/open space during the planning stage of new residential developments. Planning of these Neighborhood Park spaces should ensure safe, convenient, and desirable pedestrian access from neighborhoods to parks. In addition, parks should fit within the framework of the bluebelts concept. Where possible, Ankeny should utilize opportunities for co-location of parks facilities with other public uses, especially schools.

Figure 6.5: **Future Neighborhood Park Locations**

The Parks Plan describes a neighborhood park as serving all residential development within a one-quarter to one-half mile radius. The Parks Plan neighborhood park service area analysis reviewed current neighborhood parks and their service areas. The analysis indicated that new neighborhood parks will be needed in every growth area to serve new development. New neighborhood park locations, in accordance with the "neighborhood unit" development model, are shown conceptually in Figure 6.5, reproduced from the Park Plan. The minimum neighborhood park size is defined in the Parks Plan as 5 acres, with between 10 and 15 acres being optimal. The neighborhood park service area implies that each section of land should have one larger-sized neighborhood park, or smaller neighborhood parks serving parts of sections.

Community parks are, by definition, much larger, encompassing between 20 and 50 acres. They also serve a variety of community needs, sometimes including a special attraction that draws people from the entire community. The Park Plan identified two community parks in Ankeny: Hawkeye Park and the planned Prairie Trail Chautauqua Park. As growth continues, the Park Plan identified the need for three additional community parks, as indicated in Figure 6.6, reproduced from the Parks Plan. One anticipated expansion of Watercrest Park would serve the Northwest Growth Area. Two more community parks were deemed needed with growth: one in the North Growth Area and one east of Interstate 35 in the Northeast Growth Area. The establishment of these additional community parks as growth occurs will insure that the community maintains the high level of park

Figure 6.6: **Future Community Park Location**



service that has been one of the foundations of Ankeny's attractiveness and high growth rate.

Both neighborhood and community parks added to the system should meet the design standards and include the enhancements identified in the 2007 Parks Plan. In addition, the parks shall be located and designed such that they:

- Create an attractive visual appearance
- Preserve natural resources
- Complement the bluebelt drainageway system
- Provide for variety of uses
- Minimize maintenance cost

Figure 6.7 presents a plan for future parks, bluebelts, greenways, and open space in Ankeny's growth areas. Ankeny's existing and proposed neighborhoods, activity centers, green corridors and major open spaces are linked by a comprehensive and continuous parks and bluebelt system that combines environmental and recreational purposes. The overall concept for this system includes the following characteristics:

- Allows the park system to grow with the City;
- Provides parks and greenway facilities needed to meet community needs;
- Presents a linked park system, molding Ankeny's future open space system into a green network that unites the community.

These bluebelt corridors are conserved as an extensive open space network system. In some places, bluebelts are combined with future parks to create large recreation areas.

As detailed in the following section, recreational trails are also integrated into the network where appropriate. These green corridors tend to work as a unifying element that link neighborhoods together. They not only provide substantial environmental benefits but also help reduce air pollution and water pollution, help keep neighborhoods cooler and are a more effective and less expensive way to manage storm-water runoff.

While the bluebelt conservation areas are firmly established as indicated in Chapter 4, Environmental and Stormwater Considerations, the designated parks were developed during the Design Workshop land use concepting process described in Chapter 5. As indicated in Chapter 5, these land use concepts depict one of many possible development scenarios consistent with the stated Development Principles. Developers may suggest alternative development concepts and neighborhood park locations, provided those proposals are consistent with the Chapter 5 Development Principles and the 2007 Parks Plan park standards. New neighborhood and community parks should be located and designed to serve all the residential growth areas so that all residents have equal opportunity for parks and recreation facility use.

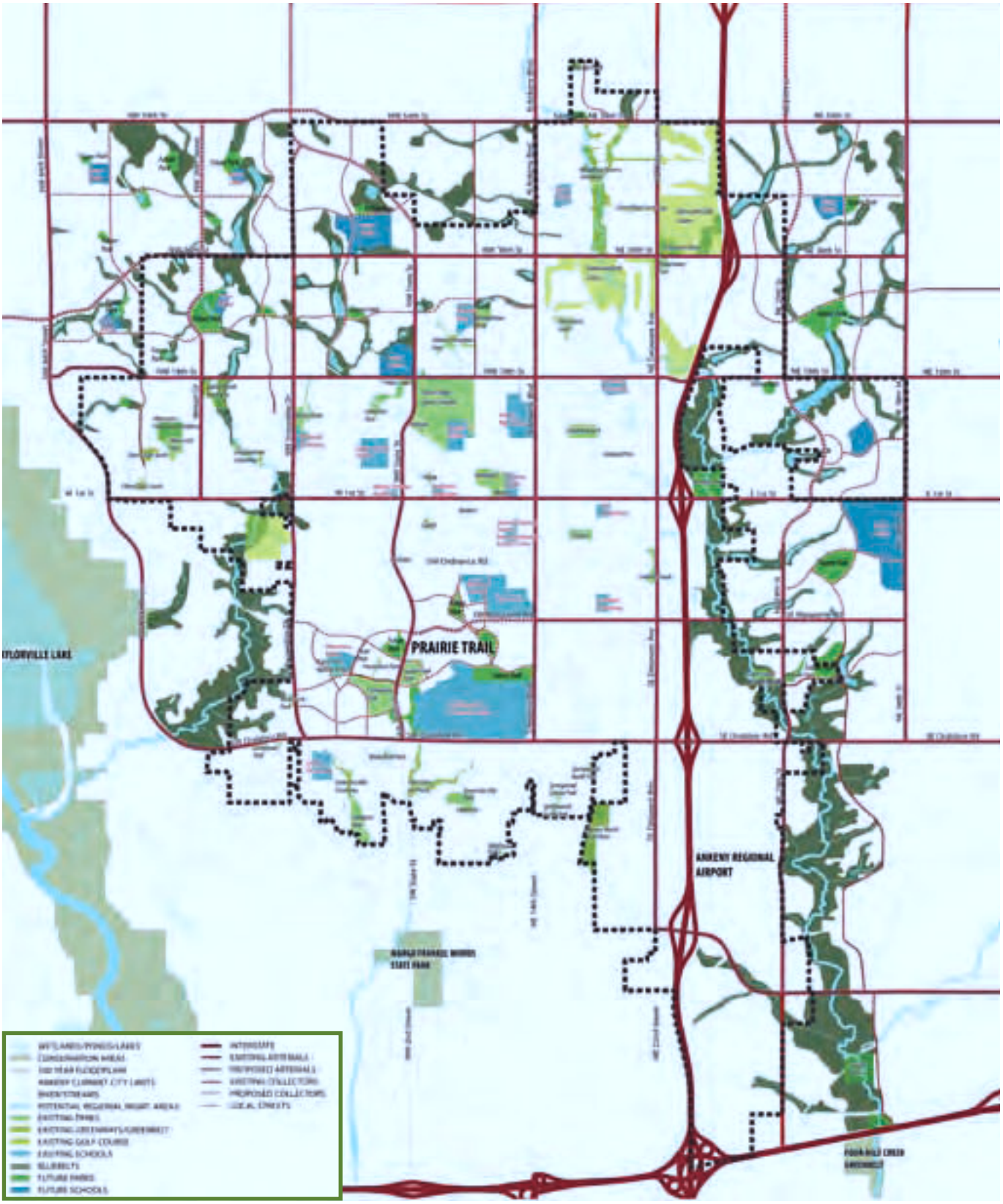
Preservation of the bluebelts can be accomplished using several different approaches, including developer dedication, City acquisition, and easement dedication. The 2007 Parks Plan Chapter 5: Implementation and Phasing provides additional information regarding these options, as does Chapter 11: Implementation, of this document.

TRAILS

Ankeny has committed to providing recreation opportunities to its residents and visitors by enhancing multi-use trails and ensuring connections to nearby regional trails. Trails are paths or roads used for walking, biking, jogging, or skating and are an important component recreation in Ankeny. Trail use has become very popular for a wide variety of users. Trails provide linkages between parks, cultural and natural resources, recreation and wildlife areas, communities and other tourism destinations in and around the city. These connections help to create a walkable environment - an important characteristic of a sustainable community.

a. Recreation Trail in Ankeny; b. Greentree Park; c. Aquatic Park; d. Recreation Trail in Ankeny

Figure 6.7: **Future Parks Plan**



Trail development has become a significant amenity in communities across Iowa. Trails are no longer an amenity found only in the state's largest communities. A good trail system is an amenity many people now seek out when making decisions on communities to settle. The benefits to trail development not only include recreation but also:

- Health and Physical Activity
- Transportation
- Economic and Community Development
- Improved Community Image and Quality
- Historical Interpretation and Linkages
- Environmental Education and Preservation
- Corridor Conservation for multiple uses

The City of Ankeny offers unique and spectacular biking/jogging/walking trails, with nearly 33 miles of paved trails (8' trail). Although the City presently has numerous trails, additional facilities will be needed as growth occurs. Furthermore, efforts should be made to improve connectivity among existing City and regional trails. Connecting this existing network to parks and other activity centers in the City, as well as the regional trail system, will establish Ankeny as a leader in providing recreation opportunities to its residents and visitors from around the region. The 2007 Ankeny Parks and Facilities Plan examined Ankeny's trails and sidewalk system and proposed a comprehensive and interconnected system of trails, sidewalks and greenways. The intent of the proposed system was to provide opportunities for alternative modes of transportation, recreational use, improved health and livability of the community and provide safe routes to schools, parks, and other destinations.

This Plan presents an updated comprehensive trails system for Ankeny, including new types of trails connecting existing and proposed parks with residential growth centers and major facilities. The trail system links residential areas, schools, parks, institutions, commercial centers and other greenway corridors. Figure 6.8 Parks and Trails Plan illustrates the different types of trails proposed for Ankeny. These include:

- Regional Trails
- Complete Streets
- Bicycle Boulevards
- Spine Trails
- Side paths
- Local Trails

Regional Trails: Regional Trails are multi-jurisdictional trail corridors that serve both recreational and transportation purposes. Ankeny serves as a hub for interconnecting regional trails including the Woodward "High Trestle" Trail (north), Chichaqua Trail (east), Neal Smith Trail (west) and the Gay Lea Wilson Trail (south). Existing regional trails are shown on bold solid red lines on the trails map. Dotted bold red lines show proposed regional trails.

Complete Streets: Complete Streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users. Pedestrians, bicyclists, motorists and public transport users of all ages and abilities are able to safely and comfortably move along and across a complete street. Such streets connect significant areas of town and are considered an amenity for the community. These streets typically include features such as ornamental lighting, additional greenway width, landscaping and include parallel facilities for pedestrians and bicyclists. Complete Street Trails are shown in red and black dotted lines on the trails map.

Bicycle Boulevards: An interconnected system of bicycle and pedestrian facilities serves not only as an alternative mode of safe and efficient transportation, but also as a means of recreation and exercise. The bicycle boulevard concept is to identify less busy, parallel corridors to major thoroughfares and direct bicyclists to

ANKENY PARKS BENEFITS

- Create an attractive visual appearance
- Preserve natural resources
- Complement the bluebelt drainageway system
- Provide for variety of uses
- Minimize maintenance cost

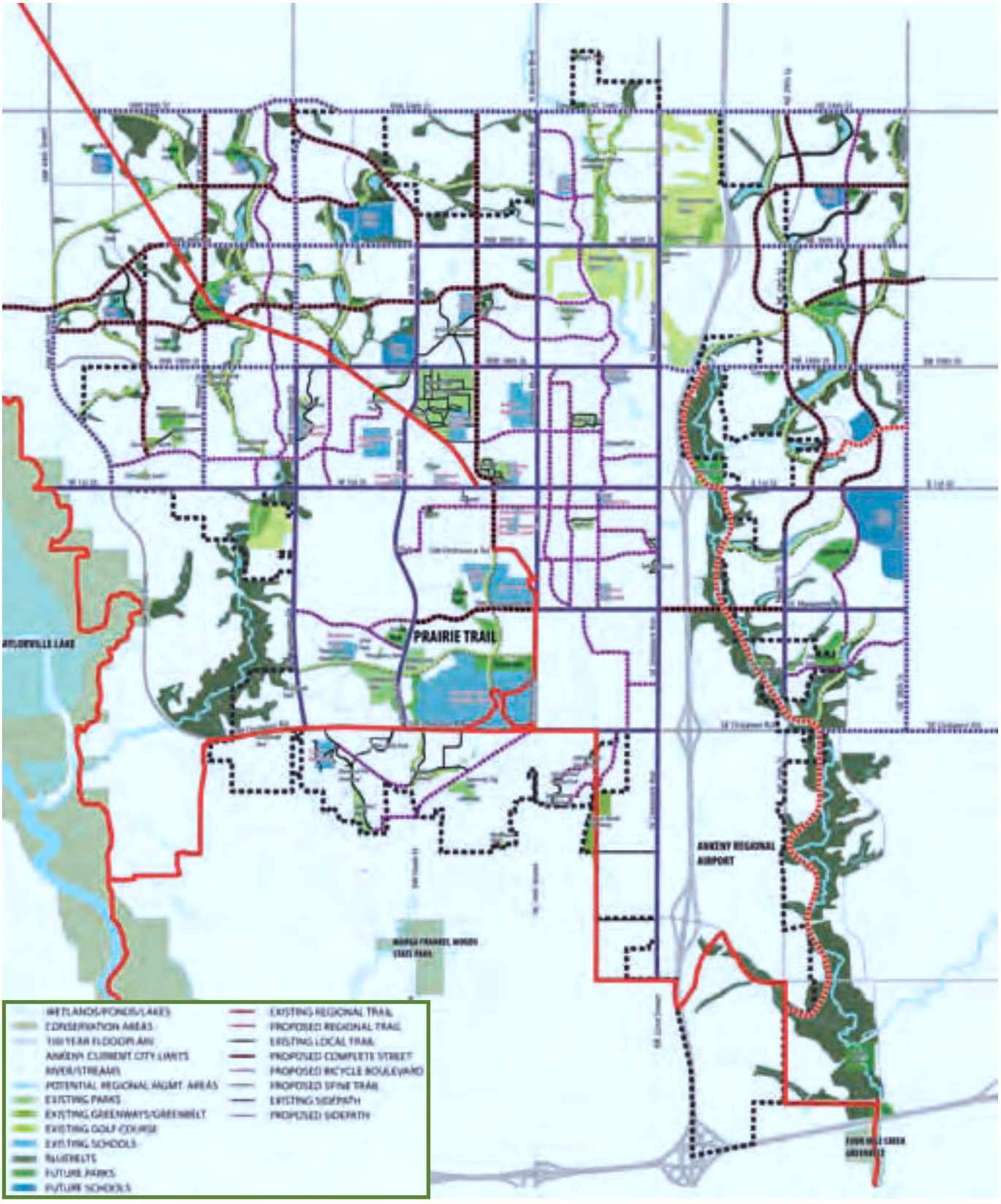
ANKENY TRAILS BENEFITS

- Health and Physical Activity
- Transportation
- Economic and Community Development
- Improved Community Image and Quality
- Historical Interpretation and Linkages
- Environmental Education and Preservation
- Corridor Conservation for multiple uses

PROPOSED TRAIL TYPES

- Regional Trails
- Complete Streets
- Bicycle Boulevards
- Spine Trails
- Side Paths
- Local Trails

Figure 6.8: **Future Parks and Trails Plan**



those streets, which are safer. The Parks and Trails Plan identify potential bicycle boulevards. Improvements to these bicycle boulevards can range from painted bike lanes to simple signage. These bicycle boulevards are shown as pink dashed lines on the map. Bicycle boulevards are proposed on some existing streets and some proposed streets.

Spine Trails: These are off street multi use trails following the bluebelts and other greenways. These trails are shown as green dashed lines on the Parks and Trails map.

Side paths: Side paths/Sidewalks are multi use pathways that parallel roadways within the street right-of-way. They may be on one side of the street or along both sides. Side paths raise safety concerns when they are used in locations having many separate property driveways. Also, extreme care must be taken by side path users when crossing streets at intersections, as some traffic turning movements can be dangerous for bicyclists. Existing side paths are shown as solid purple lines and proposed side paths are shown in dashed purple lines.

Local Trails: These are off-street trails within independent corridors typically separate from the street right-of-way. Local trails provide non-motorized routes connecting neighborhoods, schools and parks. Existing local trails are shown as black lines on the trails map.

Growth Area Parks and Trails Concepts

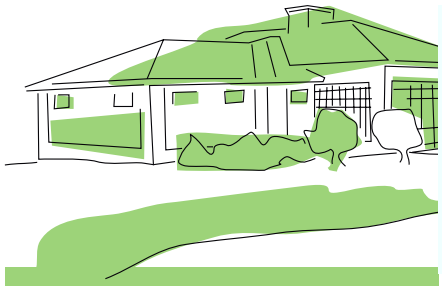
The following is a summary of the recommended park and trail facilities in each Growth Area, as defined in Chapter 5, Future Land Use Plan.

North/Northwest Growth Area

In the north and northwest growth areas, there are substantial areas designated as bluebelts, including several wetland areas are in excess of 40 to 50 acres in size. These areas are preserved, as detailed in Chapter 4. Figure 6.9 illustrates these bluebelts and proposed future parks and trails for the north and northwest growth areas. Consistent with the previously established standards, neighborhood parks of varying sizes are proposed at key locations to serve the surrounding residential areas at a half mile service radius. At most locations, the neighborhood parks are integrated into the bluebelt drainageway system.

The High Trestle Trail transverses this quadrant, and a system of spine and sidepath trails connect neighborhoods to this regional facility. Also, a number of bicycle boulevards are indicated on the proposed growth area street system. The expansion of existing Watercrest Park creates the opportunity for a Westside community park. The plan also proposes a 43 acre community park in a large wetland area at the key location where the High Trestle Trail crosses the bluebelt system. This would be a logical location for a regional trail staging facility. A number of school sites are displayed, including the site for the new Ankeny High school.

Figure 6.9: **Future Parks and Trails (North & Northwest Growth Area)**



EXISTING PARK IMPROVEMENTS

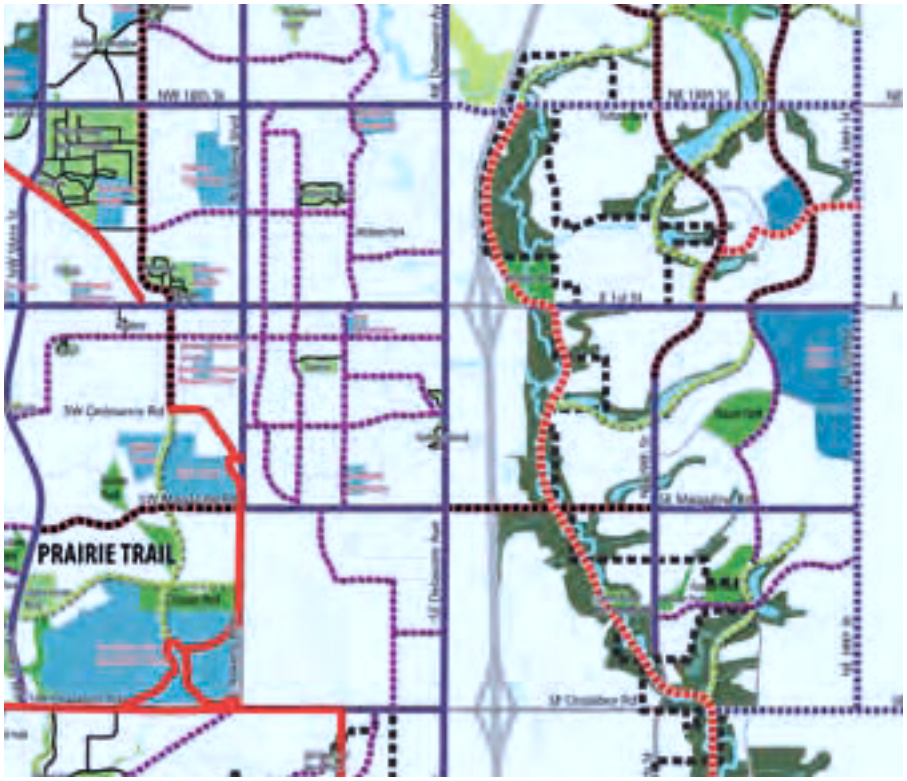
- Removing older park equipment that is unsafe and replace with new equipment.
- Establishing a landscaping plan for each of the city's parks and green spaces. The city should work with local civic organizations and school organizations to assist with upkeep.
- Identifying ways to increase utilization of existing parks.

PARK ACQUISITION PROCEDURES

- Dedication of appropriate parcels by developers
- A payment in lieu of dedication to acquire other park sites

Figure 6.10: **Future Parks and Trails (Northeast Growth Area)**

Figure 6.11: **Future Parks and Trails (Southeast Growth Area)**



Northeast Growth Area

Figure 6.10 illustrates the bluebelts, future parks and trails in this area. An 8 acre neighborhood park and a 50 acre future community park are proposed for this growth area. There are opportunities for additional neighborhood-scale parks in conjunction with the bluebelt drainageways. The proposed trail system makes extensive use of the bluebelts, as well as a proposed bicycle boulevard on the planned street system. A school site is proposed across the street from the neighborhood park.

Southeast Growth Area

With Fourmile Creek, there are substantial areas designated as bluebelts in this growth area. Figure 6.11 illustrates the bluebelts, future parks and recommended trails for this area. A 40 acre community park is proposed in the center. Additional neighborhood parks are also indicated on this concept. A major school site is proposed along NE 38th Street south of E 1st Street. A proposed extension of the Gay Lea Wilson regional trail continuing up Fourmile creek to NE 18th Street is proposed. From that location, the trail could be extended across I-35 on the new 18th Street bridge. In addition, the Northeast Growth Area proposed complete streets are extended south into this growth area.

EXISTING PARK SITE IMPROVEMENTS

Ankeny implements a regularly budgeted, incremental program of park site upgrades. Continued investment in Ankeny's existing park system ensures its status as a major community asset. Existing parks and recreation facilities are maintained on a regular basis. Other large scale park rehabilitation projects should include public surveys to identify special needs. General park site improvements are detailed in the 2007 Parks Plan and include:

- Removing older park equipment that is unsafe and replace with new equipment.
- Establishing a landscaping plan for each of the city's parks and green spaces. The city should work with local civic organizations and school organizations to assist with upkeep.
- Identifying ways to increase utilization of existing parks.

NEIGHBORHOOD PARK FINANCING

The City Parks and Recreation Department shall identify all available funding sources for facilities, operations and recreational opportunities to supplement traditional funding sources. The City Parks and Recreation Department shall seek available grant funding from local, State and Federal agencies and from non-profit foundations.

Ankeny should implement a park financing mechanism to fund park acquisition and ensure reservation for well-located and appropriately sized open spaces. Park acquisition may take place through one of the two procedures:

1. Dedication of appropriate parcels by developers
2. A payment in lieu of dedication to acquire other park sites

The City of Ankeny should establish a park land dedication policy for all new developments. The payment in lieu of dedication approach to park financing must be undertaken at the request of the developer and requires local processes to track expenditures to the direct benefit of those areas that pay the fee. The obligation for land dedication (or payment in lieu of dedication) is a function of:

- Acres in the development;
- Development density established by the development's zoning;
- Number of people per housing unit in Ankeny, differentiating between single and multi-family residences; and
- The City's desirable level of service standard in acres of neighborhood parkland per 1,000 residents.

The park finance system should be implemented through the City's land development ordinances. It provides an equitable way of financing acquisition of appropriate parks consistent with the principles of this Plan. While impact fees for neighborhood park acquisition have been struck down by the Iowa Supreme Court in recent years, legislation to allow such systems has been proposed for consideration by the Iowa Legislature. Thus, Ankeny should be able to finance new neighborhood parks in an equitable and legally defensible manner.

CONCLUSIONS

- Provide parks and greenway facilities needed to meet community needs.
- Enhance multi-use trails and ensure connections to nearby regional trails.
- Provide linkages between parks, cultural and natural resources, recreation and wildlife areas, communities and other tourism destinations in and around the city.
- Create a walkable environment which is an important characteristic of a sustainable community.

7

TRANSPORTATION

Ankeny must continue to provide good circulation within the community, as well as accomodate regional traffic needs. This chapter examines Ankeny's existing transportation network and presents strategies for providing strong transportation system.

TRANSPORTATION

- Streets take up more land than all of Ankeny's parks, trails, schools, and public buildings and other public facilities combined. For most of us, our primary contact with the outside public realm is on streets. Streets are the real front doors to our houses in neighborhoods, as well as our paths to work or play.

KEY FOUNDATION GOALS

- Define special places, nodes and corridors.
- Create "character statements".
- Determine network components.
- Review how existing systems address all modes of travel.
- Establish new system construction and retrofit objectives.

HISTORY

The City's current transportation network has been designed to focus on the movement of automobiles. The system has been measured with levels of service for the automobile, often penalizing "impacts" created by people and adjacent land uses. To accommodate the driver, larger street sections and rights-of-way have been provided to allow vehicles to move more freely and quickly. The theme has been bigger, faster, better. But are there unintended impacts?

LOOKING FORWARD

What if the transportation network is viewed in a broader sense? What if the transportation network users are more than just cars and trucks? What if the system is designed to create mobility regardless of the transportation mode that is chosen? What if the places we are going are also the places we are in?

Identifying patterns of movement will help us define the mobility network. These patterns exist today, but as time passes they will change and new ones will form. They will be affected by land uses, user needs as well as local and regional development decisions. These patterns, taken in concert with other factors will guide us in the creation of corridor types and physical standards necessary to create a safe and efficient network.

VISION OF ANKENY'S FUTURE TRANSPORATION SYSTEM

FOUNDATION GOALS FOR THE FUTURE NETWORK

To develop the future vision of the mobility network, future improvement efforts should:

Create and define a variety of special places, nodes and corridors determined by current and future development, location and land use.

Create "character statements" for existing and future areas, either specifically or generally to provide guidance for assigning mobility and context needs.

Determine the appropriate mobility network components to address the identified movement and user needs.

Review current street, freight route, transit, trail and sidewalk systems and compare them to the vision of the future mobility network.

Establish new system construction and retrofit objectives for the mobility network for each of the defined places, nodes and corridors to guide the implementation of new network elements in an effective and efficient manner.

STRATEGIC PRINCIPLES FOR COMMUNITY TRANSPORTATION

The Strategic Plan work adopted by the City Council has presented the following key principles that need to be related to concepts within this Comprehensive Plan.

Maintain a small hometown feel with livable neighborhoods and support for local businesses.

Sustain a safe community where people feel secure wherever they are, especially as related to bike riders and pedestrians.

Support active lifestyles with safe parks for walking, jogging and biking and a system of multi-use trails connecting the community.

Provide easy movement and access to the area through well maintained roads, a connected trail network, regular public mass transit within the City, complete street designs with bike lanes and on-street parking (where appropriate); and walkable neighborhoods with access to services parks and schools.

Develop a vibrant town center that is walkable and pedestrian friendly, connected by trails and transit to the existing Uptown Business District and surrounding neighborhoods.

THE EVOLVING MOBILITY NETWORK: KEY ELEMENTS AND DESIGN CONCEPTS

Key concepts and design philosophies need to be understood to guide the evolution of the City's transportation infrastructure into a system that meets the principles and goals previously described.

Complete Streets are designed and maintained to enable safe access for all users. Pedestrians, motorists, transit riders of all ages and abilities are accounted for and must be able to move safely along or across a complete street. Complete street solutions are unique in each application, but generally include sidewalks, dedicated or shared lanes for bikes, bus lanes and transit stops. Intersections and pedestrian crossings should be provided frequently and may require special accommodations for safety such as median refuges, pedestrian signals and curb extensions.

"Streets as Places" take complete street concepts a step further, directing thinking and actions toward a broader look at systems, and the context of a street and its place in the community. How can it completely serve the needs of the neighborhood and other users, and how are places connected? These concepts help strengthen the community and neighborhoods they serve. The user is not just passing through; they are in a special place within the community as they travel. Each corridor is encouraged to be attractive and develop its own distinctive identity within the context of its location.

NETWORK PLANNING USING CONTEXT SENSITIVE DESIGN

What is Context Sensitive Design?

Context Sensitive Design is a relatively new method of transportation planning, where street network design involves deeper consideration of community planning issues such as adjacent land uses, intensity of development and multiple modes of travel. The desired goal is to design street sections that accommodate expected traffic volumes at speeds that reduce barriers for pedestrians, cyclists and transit users.

Traditional design (especially of major arterial streets) tends to create large, high speed travel paths that can divide cities into sections, reducing opportunities for recreational and commercial trips to be made by another other mode than by automobile. Context sensitive design intends to create roadway sections that help to bind the community together, creating functional and aesthetic streetscapes that balance the needs of all users.

How can it be used to promote walkable communities and multimodal transportation?

The Institute of Transportation Engineers' report on Context Sensitive Solutions (CSS) for urban thoroughfares identifies

a. Aerial view of SW State Street and SW Oralabor Road; b. Newly reconstructed N Ankeny Boulevard north of N18th Street; c. Uptown District; d. SW Vintage Parkway

CONTEXT SENSITIVE DESIGN

- The information in this section is adapted from the Institute of Transportation Engineers proposed recommended practices manual: "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities" which is available at www.ite.org.
- Complete streets balance the needs of many types of users.
- "Streets as places" includes making community identity a key component in street corridor design.
- Context Sensitive Design allows the features of the surrounding community to influence the design of a given roadway, instead of a having a standard cross-section for a roadway that is applied everywhere.

several key principles that can aid in promoting development of communities are walkable and support other modes of transit as well:

Urban circulation networks should be planned to accommodate pedestrians, bicycles, transit, freight and motor vehicles.

The larger network should provide safe, continuous and well-designed multimodal facilities that work with appropriate land use plans which make walking, transit and bicycle travel more enjoyable and practical.

Street design should compliment buildings, public spaces and landscape and support recreational and commercial activities associated with surrounding uses.

Safety is achieved through consideration of the needs and capabilities of all users; meeting user expectations and appropriate selection of speed and design elements.

Street design should serve the activities planned in the surrounding areas in terms of mobility, safety, access and place-making functions of the public right-of-way. The design of the thoroughfare may change as it passes through areas where a change in character is desired.

System-wide capacity should be achieved using high levels of connectivity and appropriately spaced and sized thoroughfares, along with capacity offered by other modes of transit, rather than by focusing on increasing the capacity of an individual street.

How does it apply to network and corridor planning?

Network planning requires consideration of all modes of transportation across the City (and region) as a whole. Opportunities may be available to resolve issues along one corridor by making improvements to other elements of the overall network. The context provided by land use planning influences the level of travel demand, the location of major streets and thoroughfares and their interaction with trails, paths and other modes of travel. Several concepts influence network and corridor planning.

The transportation network may be organized by context zones, functional classifications and thoroughfare types.

Every major corridor should be designed to accommodate transit and pedestrians, as well as private and commercial vehicles.

Networks should be designed to concentrate longer distance trips along limited access arterial thoroughfares.

Any planned transit networks should focus on transit-oriented developments.

Right-of-way planning should consider qualitative and quantitative measures of network performance including multiple modes of travel, rather than being measured only by traffic capacity or level of service. Decision criteria should balance the needs of community character, capacity and relief of congestion.

System-wide capacity should be achieved using high levels of connectivity and appropriately spaced and sized thoroughfares, along with capacity offered by other modes of transit, rather than by focusing on increasing the capacity of an individual street.

OVERVIEW OF ANKENY'S EXISTING TRANSPORTATION SYSTEM

BIKE AND PEDESTRIAN ACCESS

Nearly all of Ankeny's streets have sidewalks or trails to accommodate pedestrians and bicycle riders. A network of trails follows major streets and greenbelts, providing a variety of recreational opportunities. Connections to several regional trails are either planned or under construction. However, it is desired to identify improvements to the existing system of sidewalks and trails that can increase opportunities for short commuter and retail trips by walking or cycling.

FREIGHT TRANSPORTATION

The City's network of arterial streets (as well as certain collectors) provides access for vehicle freight transport from local business centers to the regional highway network. The majority of commercial deliveries within the City use this network of roads.

A spur of the Union Pacific Railroad does provide commercial delivery and shipping access to the John Deere manufacturing facility, located west of SW State Street and south of SW 3rd Street. This spur connects to other rail lines within the City of Des Moines.

TRANSIT SYSTEM

Currently, the City is served by the Des Moines Area Regional Transit system (DART) by two designated bus routes and local on-call site to site transport. The express commuter route (Route #98) provides service to and from downtown Des Moines with six trips in each of the morning and afternoon rush hours, spaced at 10-20 minute intervals. A park and ride facility is available near the Mercy North facility on East First Street, which is served by the express commuter route.

Between commuter peak times, DART Route #71 provides service between the SE Delaware Avenue area near Oralabor Road and a transfer hub to Route #7 at E. 29th Street and E. Euclid Avenue in Des Moines. Route #7 provides service to the downtown business district, Blank Park Zoo and Southridge Mall.

On-call service is available to residents two days a week, allowing residents to be picked up at their door and dropped off at any destination within Ankeny. Residents can contact DART at 283-8100 or dmmta.com for more details or updated information.

AIRPORT

The Ankeny Regional Airport is the third largest airport in the State of Iowa. The airport primarily serves a variety of small commercial aircraft. Over 150 aircraft are currently based out of this facility. The airport features a primary runway of 5,500 feet and a crosswind runway of 3,800 feet. Several hangars and a North Terminal area currently provide storage and access to aircraft at the facility.

Access to the airport is provided from SE Oralabor Road via SE Convenience Boulevard. It is that over 60,000 passengers are currently served each year.

STREETS AND ROADS

As stated earlier, the Ankeny's transportation network has historically developed to serve the needs of motorists. The major streets and highways within the exist-

CONTEXT SENSITIVE DESIGN CONCEPTS

- Networks should accommodate all modes of travel.
- The network should make walking, transit and biking more enjoyable and practical.
- Street design should compliment the surrounding community.
- Selected design features should enhance safety by controlling speed and access.
- The design of a street may change as it passes through different "context zones" or land uses within the community.
- Capacity should be provided through a network of streets, rather than focusing on widening a single corridor to accommodate more vehicular traffic.
- Longer distance trips should be concentrated along limited access routes.
- Focus transit where land uses can support it.
- Network performance should be measured by more diverse standards than just level of service for automobiles.

EXISTING CITY TRANSPORTATION SYSTEM KEY FEATURE

- Bike and pedestrian access is typically provided by a connected network of sidewalks, sidepaths and recreational trails.
- Freight routes have been established along most major street corridors.
- Limited commuter transit routes connect Ankeny to the DART bus transit system.
- The Ankeny Regional Airport provides significant access for small commercial aircraft to the entire Des Moines metropolitan area.

EXISTING FUNCTIONAL CLASSIFICATIONS

- Interstate Highways
  Ex: Interstate 35
- Arterial Streets
  Ex: Ankeny Boulevard, Oral abor Road etc.
- Collector Streets
  Ex.: Trilein Drive, N. 9th Street etc.

ing system can be generally grouped into three functional classifications:

Interstates and freeways are multi-lane divided highways with controlled access only at grade-separated interchanges. Travel speeds in excess of 65 mph are typical in rural and suburban areas and no provisions for pedestrian access are included.

Interstate 35 and most portions of the planned Northeastern Beltway are within this classification of roadway.

Arterial streets typically carry higher traffic volumes consisting of a balance of regional and local trips. To improve safety while dealing with these higher flow conditions, access points are usually limited to a certain degree. The City has developed a strong network of arterial streets, primarily spaced at one mile intervals along section lines.

Major arterial streets like Ankeny Boulevard and Oralabor Road are corridors that serve regional as well as local traffic needs.

Minor arterial streets, like Irvinedale Drive and N 18th Street are expected to have slightly lower traffic volumes, and usually accommodate local trips, or provide access to the major arterial streets.

Collector streets provide important connections between individual neighborhoods and access to the arterial street network. These streets also serve to link cyclists and pedestrians with local parks, trails and businesses.

Residential properties front many of these types of streets, and aesthetic features are important to consider in the design process. These streets typically are designed as lower speed (25 mph) two lane streets, but may have turn lane accommodations at major intersections.

Major Collectors are roads like Trilein and N 9th Street that connect several neighborhood districts and can cross multiple

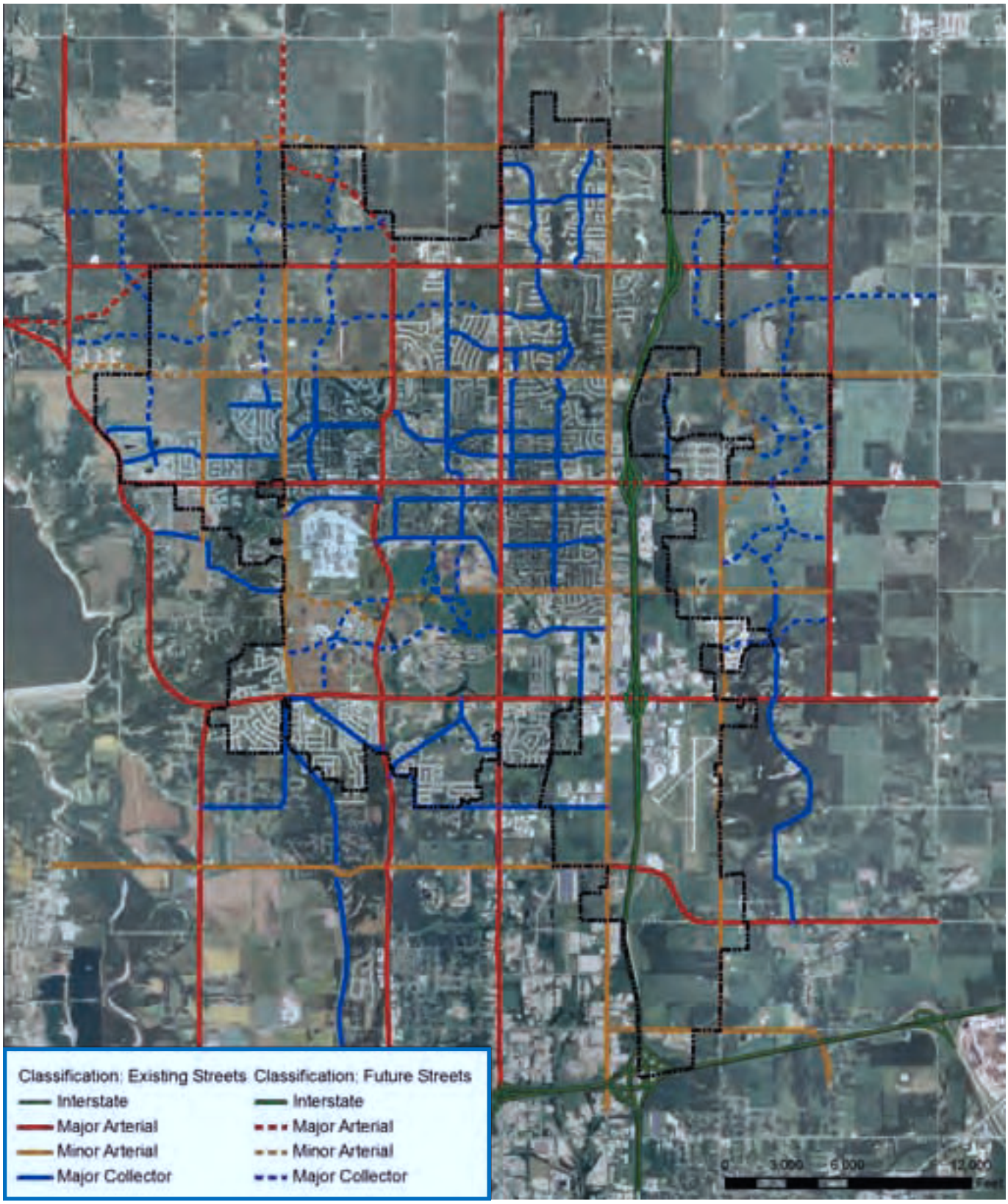
a. Recreational Trail near State Street; b. Highway in Ankeny; c. Residential Street in Ankeny;

arterial corridors. They play an important role in community connectivity and providing parallel access to business areas and arterial street corridors.

Minor Collectors are roads like Georgetown and N 5th Street that carry traffic in one neighborhood, or perhaps across a single arterial corridor. These roadways enhance local connectivity and provide multiple options to travel from point to point within a neighborhood, instead of focusing all traffic onto one or two streets.

Figure 7.1 depict the existing street classification system in Ankeny.

Figure 7.1: **Existing Street Functional Classification**



RELATIONSHIP WITH REGIONAL TRANSPORTATION SYSTEM

Existing Highways and Regional Arterials

Interstate 35 runs north-south through the eastern part of the City, accessible at interchanges at First Street, Oralabor Road and Corporate Woods Drive. This freeway provides regional access to Ames and other portions of the Des Moines Metropolitan Area, as well as national access to major cities from Minneapolis-St. Paul to Dallas-Fort Worth.

U.S. Highway 69 (Ankeny Boulevard) runs through the City's center, and although part of the federal highway system, generally serves local traffic needs. This highway does provide important connections to Ames and Des Moines.

State Highway 415 runs through the western part of the City and provides an important connection between Polk City and the Interstate 35-80 corridor along the northern edge of Des Moines. Through its connection with State Highway 160 (Oralabor Road), it is linked with industrial and retail centers in southeast Ankeny, as well as Interstate 35.

East First Street, Oralabor Road and Corporate Woods Drive extend eastward as two lane paved county roads toward Boundurant and the U.S. Highway 65 corridor, which provides commercial and commuter access to the Marshalltown area.

Proposed Regional Transportation Improvements

A number of significant improvements are already at various stages of planning that will influence transportation needs within the City. These include the following:

Interstate 35 Corridor

- New interchange at Interstate 35 and NE 36th Street
- Interchange improvements at Interstate 35 and E First Street
- Widening of Interstate 35 to six lanes between NE 36th Street and E First Street
- Overpasses without freeway access at NE 54th Street, NE 18th Street and SE Magazine Road

Northeastern Beltway Corridor

A controlled access expressway is currently under consideration by the Des Moines MPO, extending north from the Interstate 80 / U.S. Highway 65 interchange near Altoona along the eastern planning area boundary of the City of Ankeny.

Originally, this highway was expected to turn westward along the northern edge of the City, however recent planning discussions indicate that this highway may be located further north, outside of the current planning boundaries. The movement of this planned highway may influence the significance of the NE 36th Street corridor as a regional connection between Polk City and Interstate 35.

North-South Connector Corridor

Planned interchange improvements at NW 26th Street in rural Polk County may allow for a more significant connection between western portions of Ankeny and the central core of the Des Moines Metro Area. Such improvements would create a major arterial boulevard that would extend from the Southeastern Beltway near the Des Moines Airport up through the Fleur Drive / Martin Luther King Boulevard corridor to Highway 415.

Other improvements could extend this connection to NW 44th Street in rural Polk County which is an extension of Dakota Avenue in Ames.

Figure 7.2 depict the planned regional transportation improvements in Ankeny.

SHORT-TERM PLANNED MAJOR TRANSPORTATION IMPROVEMENTS

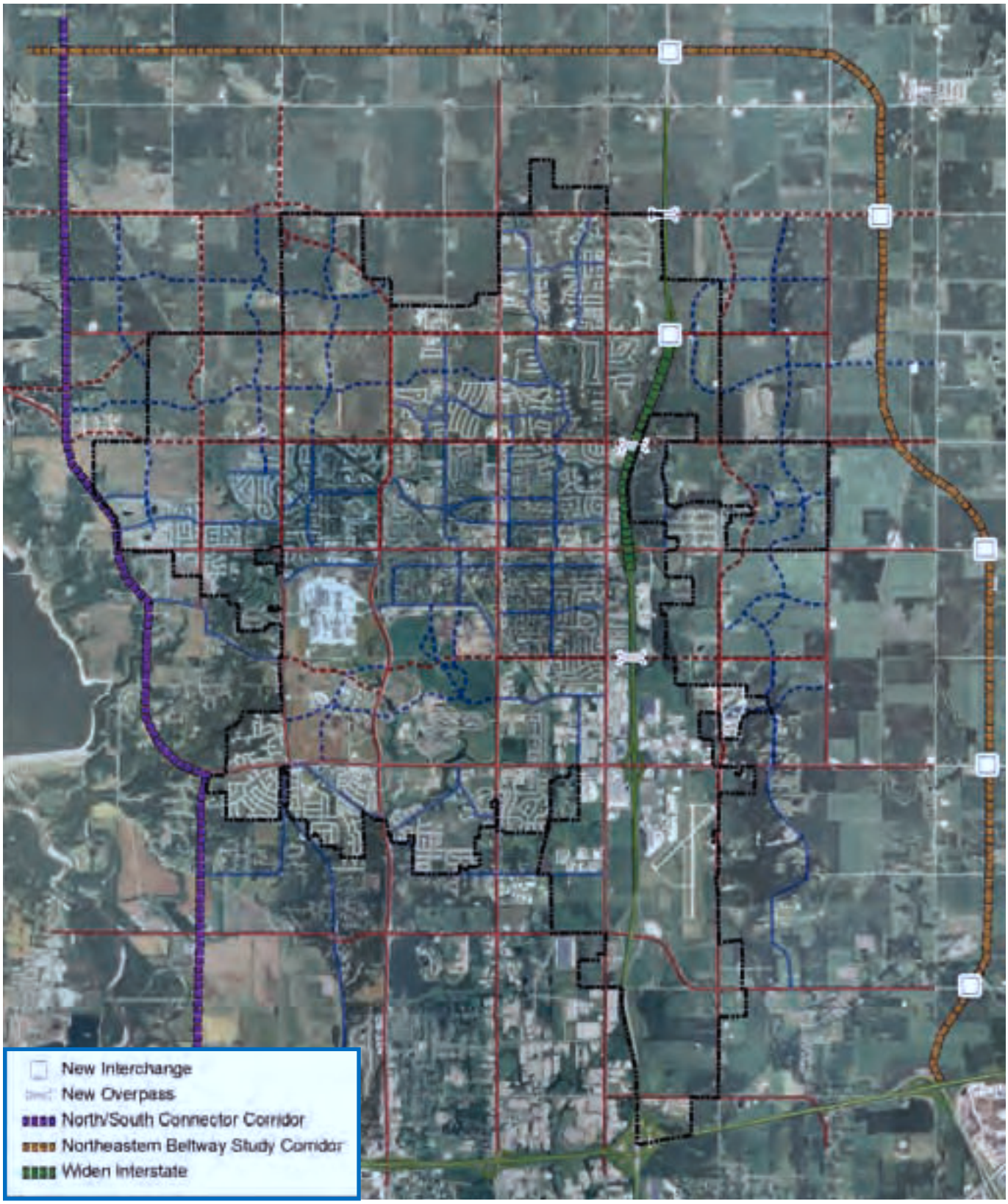
A number of transportation related improvements have already been programmed into the 2010 – 2014 City of Ankeny Capital Improvement Program (CIP).

Table 7.1 lists these improvements projects along with their projected completion year. Figure 7.3 depicts these CIP Improvement projects in a map.

CURRENT MAJOR PLANNED REGIONAL TRANSPORTATION IMPROVEMENTS

- Widening of Interstate 35 though N. 36th Street
- New interchange at N. 36th Street
- New overpasses over I-35 at N. 18th Street, N. 54th Street and SW Magazine Road.
- Northeastern Beltway Corridor connecting the Polk City area to Interstates 35 and 80.
- North-South Connector Corridor with interchange at Interstate 35 and 80 near NW 26th Street alignment (projection of Martin Luther King Pkwy.).

Figure 7.2: **Planned Regional Transportation Improvements**

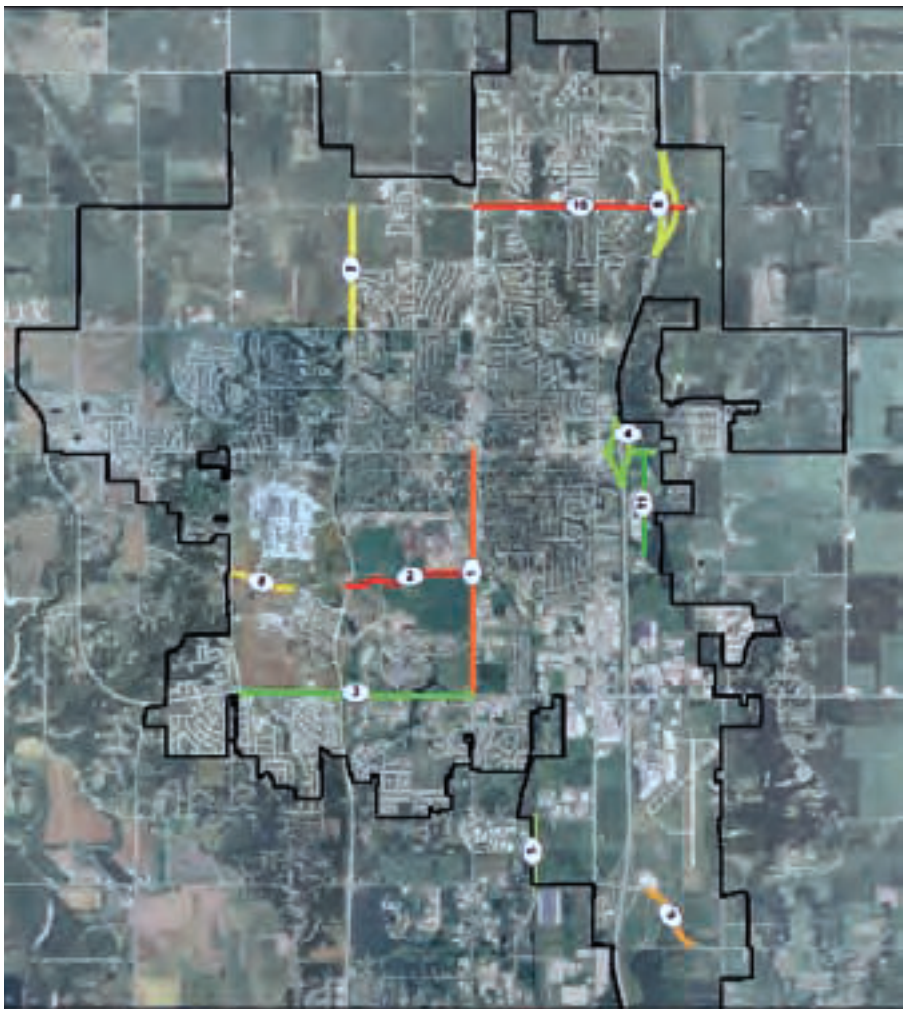


a. Highway 160 (SW Oralabor Road); b. Existing Trail; c. Existing Street in Uptown District; d. Existing Street with landscaping and street features

Table 7.1 Short Term Planned Major Transportation Improvements

	Planned Improvement	Year
1	S Ankeny Boulevard Improvements	FY 2010
2	SW Magazine Road Extension	FY 2010-2011
3	Neal Smith Connector Bike Trail	FY 2010-2011
4	E 1st Street Interchange at I-35	FY 2010-2012
5	Gay Lea Wilson Trail Extension	FY 2010-2012
6	NE 36th Street Interchange at I-35	FY 2010-2012
7	NW State Street Widening	FY 2012
8	SW Vintage Parkway	FY 2013
9	Corporate Woods Drive Railroad Overpass	FY 2013
10	NE 36th Street Widening	FY 2013 - 2014
11	SE Creekview Drive Paving	FY 2014

Figure 7.3: CIP Improvements Map



EVOLUTION TO A NEW MULTI-MODAL MOBILITY NETWORK

Changing our point of view is challenging. Developing systems that provide a better balance between modes of travel will not be easy. The following sections design concepts and guidelines that can aid in development of a multi-modal mobility network which supports the strategic principles of community transportation.

NETWORK SPACING AND CONNECTIVITY

Planning and building connectivity into the street network provides for access and capacity, and allows multiple modes of transportation to arrive at the same destination by a variety of travel paths. This reduces the focus of all traffic elements on a single dominant corridor, which can lead to congestion or the need to build additional lanes, signals and controls.

While expanding a single corridor may meet auto traffic capacity requirements, it may diminish access to adjacent properties or create a barrier for use and interaction by pedestrians and cyclists. Connectivity can be improved in the following ways:

Arterial streets should be spaced at approximate one-mile intervals, generally in a rectilinear form (unless influenced by development constraints, land features or other planning considerations).

Major collectors should be planned at least mid-section, between each arterial street. Minor collectors should be considered at closer intervals based on adjacent land uses to enhance connectivity within and between individual neighborhoods.

A system of bicycle facilities should be provided with parallel routes usually no more than one-half mile apart. These may include separated paths, bike lanes and shared lanes on traffic calmed streets with lower automobile traffic volumes.

Local streets should be provided in a dense, connected pattern internally to the neighborhood, with multiple connections to collectors and arterials. Where block lengths are long or ability to provide access is limited, supplemental bike-pedestrian access points may be necessary.

Pedestrian facilities should be spaced so that block lengths do not exceed 660 feet (200 to 400 feet preferred) and direct routes are provided as much as possible. In higher density development areas, pedestrian accommodations should be provided more frequently, at intervals of 200 to 300 feet (with maximum desired spacing of 400 feet).

NETWORK PLANNING FOR BIKE AND TRAIL USERS

A key goal for the City's future transportation network, is to better provide for alternative means to travel within the community between residential areas and centers for work and recreation. Traditionally sidepaths have been developed along arterial streets, some of the major collector streets and certain greenbelt corridors. The "bluebelt" network described in Chapter 6 can feature trails serving a dual purpose for recreation while providing maintenance and recreational access to rainwater management areas.

These corridors generally run north-south within the City. Additional access corridors for trails may be required along collector streets or greenbelt corridors that run east-west in developing areas. Enhanced provisions for bicycle traffic may be necessary in established neighborhoods with limited access to the trail system. This is explored in more detail in Chapter 6 – Parks and Open Space.

DEVELOPMENT OF MASS-TRANSIT OPPORTUNITIES

Currently, existing land uses do not support widespread use of mass transit. An incremental approach will be neessary to develop a locally based system of transit with regular service throughout the com-

a. Existing Street in Ankeny; b. Existing Recreational Trail in Ankeny;

STRATEGIC PRINCIPLES FOR COMMUNITY TRANSPORTATION

- Maintain a small hometown feel.
- Sustain a safe community.
- Support active lifestyles.
- Provide easy movement and access.

a. Regional Highway (SW Oralabor Road); b. Regional Boulevard (N Ankeny Boulevard); c. Community Boulevard (SW State Street); d. Community Avenue (SE Delawaew Ave)

munity.

In developing areas; promote land uses, development styles and densities that can support expanded use of a mass transit system. This can involve planning higher-density development near planned future transit nodes or stops.

Develop a shared system to serve the City and school district needs. This could reduce the need for neighborhood busing of school children and provide opportunities to develop regular community service routes available to the public at off-peak times.

As demand increases, develop a local shuttle or loop system of some type. Such a system might connect the N 36th Street corridor to Ankeny Boulevard, Uptown, Prairie Trail, SE Delaware or other commercial or employment areas.

Future growth in Ames, Polk City, Elkhart and other regional communities may warrant development of a park and ride or transit hub near the proposed interchange at I-35 and N 36th Street. This could accommodate additional service and connections to the regional DART system and downtown Des Moines.

Expanding connections to the regional transit system is maintained as a long-term goal. However, it should be recognized that potential growth of employment and retail opportunities locally may have the effect of reducing the long-term need for transit connections to downtown Des Moines or other regional commercial centers.

NETWORK AND CORRIDOR DESIGN CONSIDERATION

Corridor design builds off of many of the parameters reviewed and discussed at the network level. Each corridor should not be looked at in isolation, rather as a component part of the larger system with an anticipated set of users and functions. The Institute of Transportation Engineers' Context Sensitive Solutions report details five steps in the design of a given corridor.

Review the overall transportation plan for the City (and region).

Understand the community vision for the corridor. What are the future plans along and around the corridor and how does the street need to accommodate those needs?

Identify compatible thoroughfare types and context zones. What type of street best meets the needs of the surrounding area?

Develop and test the initial thoroughfare concept. Establish parameters such as functional class, speed, number of lanes and right-of-way design. Does it meet the functional and place-making needs of the surrounding area as well as

the network at large?

Develop a detailed thoroughfare design. Design the width and size of the elements within the street section, as well as other landscape and aesthetic features that accommodate the identified needs.

THE ANKENY NETWORK OF STREET CORRIDORS

Now that the foundation and framework of a new mobility network have been established, the existing system can be used as a baseline to review what new elements or amendments are necessary to meet the established goals and principles. The types of street corridors that are in use or anticipated to be needed in the future can generally be divided into one of several categories:

Regional Highways play a significant role in traffic patterns from areas outside of Ankeny. These roadways are influenced significantly by larger-scale planning efforts and need to meet regional as well as local needs. They have traditionally developed as multi-lane divided roadways with wider lanes, very limited access, design speeds of 50 mph or more and rural ditch sections. These roadways are influenced by state highway design standards and can accommodate higher automotive traffic volumes, but often to the detriment of other modes of travel, community connectivity as well as aesthetic and contextual design. (examples: Highway 415 and 160)

Regional Boulevards are major arterials that must meet regional transportation goals, and are designed as multi-lane divided streets with wider lanes to accommodate higher speeds, but access is less restricted and most of the time these streets are developed with an urban curb and gutter street section with sidewalks and sidepaths for bicycles. Future roadways of this type may need better provisions for pedestrian safety at major intersections. (examples: SE Oralabor Road, portions of Ankeny Boulevard north of N 18th Street and South of Oralabor Road)

Community Boulevards are major arterials meet regional and community level transportation goals, and are also designed as multi-lane divided streets. To better accommodate pedestrian and bicycle use, design elements should focus on reducing travel speeds and providing safe crossings at major intersections and at reasonable intervals in between. Addition of an "auxiliary lane" can serve right-turn movements, transit stops and provide for on-street parking near neighborhood commercial districts. Wider medians and verges can provide additional protection for pedestrians and bicyclists and allow for additional landscape elements to be installed. (examples: the future N 36th Street corridor and portions of N Ankeny Boulevard between N 18th Street and 1st Street)

Community Avenues are major or minor arterials that provide mobility between different areas within the community, or connections to regional transportation corridors. These multi-lane roads may have optional medians near intersections or key pedestrian or trail crossings. Design features should again be selected to reduce travel speeds to 35 mph or less. Transit will be limited on most of these corridors so an "auxiliary lane" will likely not need to be dedicated for transit or turning traffic. On-street parking may still be considered in certain contexts. (examples: SE Delaware Avenue and First Street)

Neighborhood Avenues may be minor arterial or major collector streets focused on connecting several neighborhood areas to community and regional corridors. They also provide important routes for local freight and commercial traffic. These streets do not usually have enough traffic to warrant more than one through lane of traffic in each direction. Turn lanes may be developed near intersections with arterial or major streets. As most of these corridors pass primarily through residential areas, their design features should focus on encouraging travel speeds of 30 mph or less. (examples: N 18th Street, E Magazine Road)

a. Neighborhood Avenue (NE 18th Street); b. Community Street (N 5th Street); c. Shopping Street (SW 3rd Street); d. Neighborhood Parkway (SW Precedence Parkway);

Figure 7.4: **Projected Street Types**

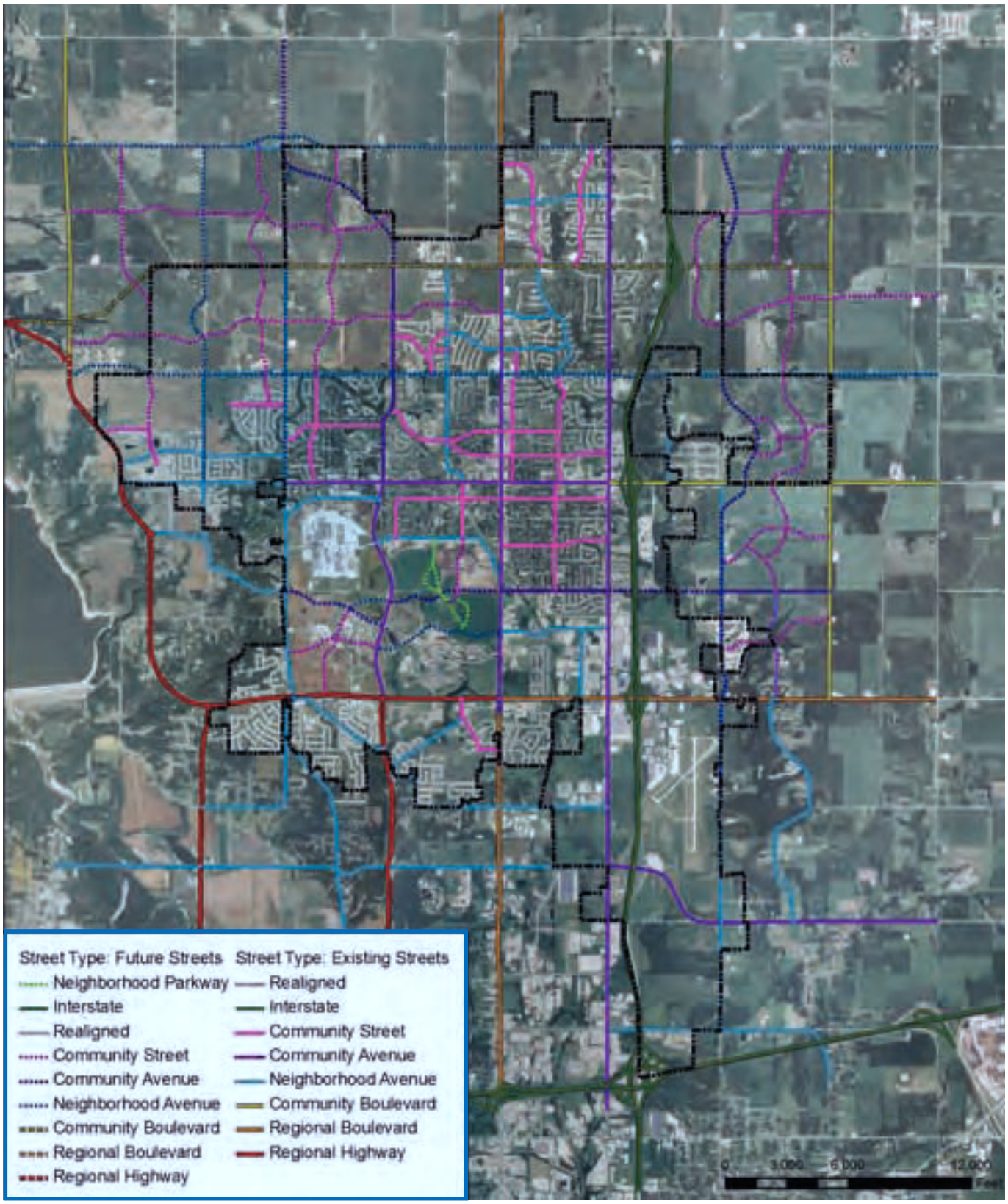
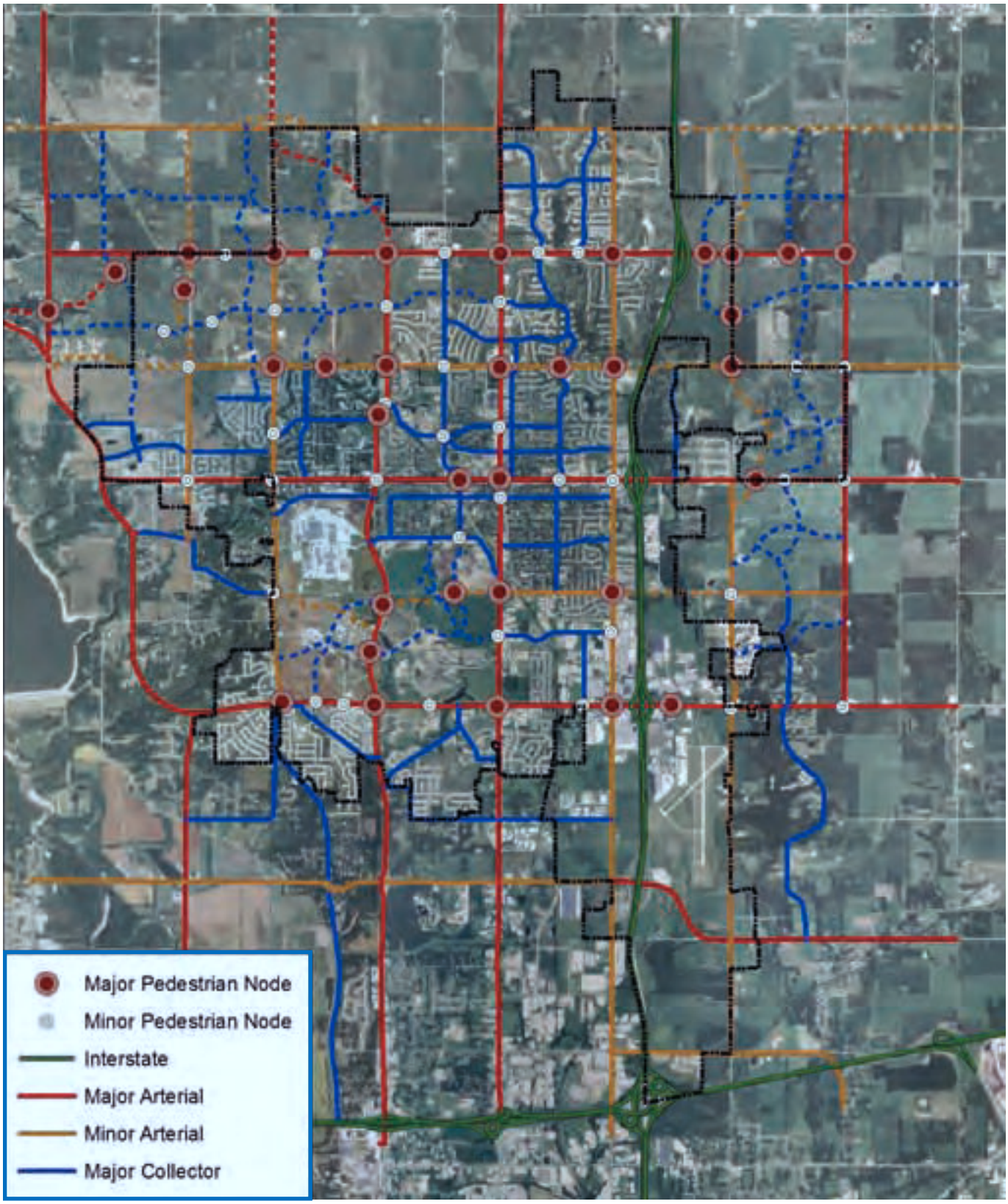


Figure 7.5: **Key Pedestrian Nodes**



e. Neighborhood or Local Street (NW Maple Street)

ANKENY NETWORK OF STREETS

- Regional Highways
- Regional Boulevards
- Community Boulevards
- Community Avenues
- Neighborhood Avenues
- Community Streets
- Shopping Streets
- Neighborhood Parkways
- Neighborhood Streets
- Local Streets

Community Streets are collector streets that connect several neighborhood districts and can cross multiple arterial corridors. They play an important role in community connectivity and providing parallel access to business areas and arterial street corridors.

They still carry moderate traffic volumes, and provisions for cyclist and pedestrian safety are important. Turn lanes may be necessary at intersections with arterial streets. (examples: Trilein Drive and N 9th Street)

Shopping Streets are sections developed in commercial districts that are focused on providing on-street parking and pedestrian access. Design features such as intersection treatments, pedestrian islands and landscaping should work in concert to reduce speeds in these districts to under 20 mph. (examples: W 3rd Street in the Uptown District)

Neighborhood Parkways are unique corridors designed to accommodate one-way traffic on either side of an enlarged park or open space. These corridors should allow for one clear lane of traffic and each direction with on-street parking along the side of street fronting private properties. A recreational trail may extend through the enlarged park or open space in the "median". (examples: SW 18th Street, SW Precedence in Prairie Trail)

Neighborhood Streets are typical links that provide access to individual homes and properties in residential neighborhoods. Features like reduced lane widths, on-street parking and other traffic calming elements should be used to maintain auto travel speeds at 25 mph or less. (examples: SE 4th Street, SW Pleasant Street)

Local Streets are short dead end, loop street or minor connections of only a block or two in length, where a significant amount of through traffic is unlikely.

Figure 7.6: **Growth Issues**

Street sections may be further narrowed to control speeds in these areas. (examples: NE Briar Creek Drive, SE 6th Court)

CORRIDOR DESIGN ELEMENTS

As each type of street corridor plays a different role in the mobility network and serves different blends of users, each type of street needs different guidelines for corridor development.

Access Management

While the desire to provide connectivity requires more points of access to major streets from local streets and individual properties, there are areas where access needs to be limited or prohibited to accommodate expected traffic volumes on higher capacity roadways in a safe and effective manner. This can also reduce the number of conflicts for bikes and pedestrians using separated walks and trails along arterial streets. Access along these corridors can be provided to adjacent properties through collector streets intersecting or running parallel to the arterial corridor or shared driveways or common points of access.

Design Vehicle

What is the anticipated blend of traffic and what types of users should design be based on? Routes with higher levels of commercial truck or bus traffic may need wider lanes or turning radii at intersections. Such features tend to increase travel speeds and allow cars to perform faster turning movements. Selection of an appropriate design vehicle means determining where these features are needed, and use other features to control speed and turning movements where large vehicle traffic is not anticipated to be significant.

Design Speed

Regardless of posted speed limits, people will usually drive faster where wider lanes, high visibility and few points of conflict are provided. Higher speeds provide a slight increase in auto traffic capacity, but can make it difficult for pedestrians and cyclist to cross at intersections. It can also create issues at bus and transit stops where slow moving or stopped vehicles may interact with faster moving traffic. Context sensitive design allows for roadway design parameters to be set where higher traffic speeds may be desirable on certain regional corridors, but other street design features may need to be included in areas where other modes of transportation or pedestrian interaction are being encouraged.

Functional Capacity

The amount of traffic expected within a given corridor will need to be considered in determining the number of travel lanes and how major intersections are designed. This has typically been evaluated by "Level of Service" or basically a letter grade (A through F) assigned to the street based on its current traffic volume related to the overall capacity of the corridor. This method provides a general measure of traffic congestion levels, but does not necessarily take into consideration other modes of travel and their needs for traffic gaps, lower travel speeds, etc. to operate efficiently. It is important in network design to assign estimates of auto traffic flow to major street corridors and consider this information when preparing a cross-sectional design to accommodate all desired modes of transit.

Traffic Control

Signs and signals are often necessary to organize traffic and pedestrian interaction at major intersections. On arterial streets (and some major collectors) appropriately spaced and sequenced traffic signals can control traffic speeds and provide appropriate gaps in traffic to allow pedestrians and cyclist to cross (even between signals) more safely. However, if signals are spaced too closely, or not sequenced correctly, it can greatly reduce the functional capacity of a given street. Larger intersections with longer crosswalks, more turning lanes, and longer cycle lengths may increase delay at major intersections and commercial developments; even to the point of discour-

KEY QUESTIONS TO REVIEW IN CORRIDOR DESIGN

- Is the corridor a regional link, where access should be limited or is local interaction important?
- Are large numbers of trucks are buses expected which require larger turning radii?
- Do surrounding land uses warrant lower traffic speeds to encourage pedestrian or bicycle use?
- How much traffic is expected along this corridor and are there alternate parallel routes should congestion develop?
- What type of traffic control is needed to balance all anticipated modes of travel?

CORRIDOR DESIGN ELEMENTS

- Access Management
- Design Vehicle
- Design Speed
- Functional Capacity
- Traffic Control

Table 7.2 Street Facility Design Guidelines

	Functional Class				Access Spacing Guidelines				Design Parameters	
					Lane Uses					
Street Type	Major Arterial	Minor Arterial	Major Collector	Minor Collector/Local	Signal Controlled	Full Access (Stop Control on Minor Streets)	Partial Access (Alley or Right In/Right Out)	Private Residential Driveways	Speed Limit (mph)	Capacity Range
Regional Highway	X				2640′	1320′	300′	Limited	55	10,000 – 35,000
Regional Boulevard	X				1320′	660′	300′	N	45	5,000 – 25,000
Community Boulevard	X				1320′	660′	300′	N	35	5,000 – 20,000
Community Avenue	X	X			660′	660′	300′	N	35	5,000 – 15,000
Neighborhood Avenue		X	X		660′	300′	300′	N	30	500 – 5,000
Community Street			X	X	--	300′	150′	Y	30	500 – 5,000
Shopping Street			X	X	--	300′	150′	N	20	500 – 5,000
Neighborhood Parkway			X	X	--	300′	150′	Y	25	500 – 5,000
Neighborhood Street				X	--	300′	150′	Y	25	500 – 5,000
Local Street				X	--	300′	--	Y	25	< 500

a. Two 11′ wide lanes with 7′ parking lane (SW Vintage Parkway); b. Landscaped Median (SW State Street)

aging drivers from using those corridors or points of access. These are important considerations in both corridor and intersection design.

CROSS-SECTION DESIGN ELEMENTS

Context Sensitive Design, as applied to street design, balances the needs of all modes of travel planned for a given corridor by using all elements within the street right-of-way (and in some situations the entire area between building faces) to promote desired travel speeds and create safe places where automobiles, pedestrians, cyclists and other modes of transit interact. By applying certain design standards to each of a series of these elements of design, the desired balance between users can be achieved.

Lane Widths

Wider lanes promote higher speeds and create longer distances for pedestrians and cyclists to cross at intersections. A two foot increase in lane width on a four lane arterial with a turn lane can add 10 feet to a street cross-section. Travel speeds of 35 mph usually can be accommodated with lane widths of 10-11 feet. Larger lane widths of 12 feet may be appropriate on higher speed or regional arterial streets (target speed of 40 mph or higher). Lanes with significant bus traffic should be at least 11 feet in width, expanded to 13-15 feet only in areas around bus stops and turning locations.

Medians

Medians help control access, manage traffic patterns around intersections, create opportunities for landscaping and aesthetic features and can provide refuge for pedestrians crossing wider street cross-sections. It is desirable to provide a uniform median width along a corridor to avoid unnecessary lane tapers and movement. Medians of 10 foot width are usually necessary to support large caliper

trees. In sections where left turn lanes are anticipated, typical median width may be determined by adding the required turn-lane width and an appropriate width for a pedestrian refuge island (8 feet). This could result in typical median widths of 18-20 feet along major arterial corridors.

On-street Parking

On-street parking has traditionally been promoted in Ankeny in residential neighborhoods, to serve the needs of local residents, provide access to parks and other amenities and to act as a method of traffic calming to reduce travel speeds.

Principles of Context Sensitive Design imply that use of on-street parking is beneficial along arterial streets as well in certain settings, such as near a neighborhood commercial center where street parking can create a more "main street" feel and encourage better access and pedestrian interaction. Existing corridors should be reviewed to look for contexts where on-street parking might be desirable, and where there is available right-of-way or property that could be acquired to develop such facilities.

Pedestrian Buffers

The area between the edge of the traveled roadway surface and the typical sidewalk or trail alignment is often called the verge or parking grade. The width of this area will often vary depending on the planned surrounding land uses (context zone).

The desire to provide street trees, planter beds, street furnishings or other plaza elements will determine the ultimate width for this element. These features help to control speeds, as well as to create a place where the street corridor better interacts with the surrounding land uses.

In most residential settings, a buffer width of 8 feet is required to accommodate street trees between the roadway and adjacent walks and trails. These areas also become important for snow storage during the winter months.

Sidewalks and Trails

As is the case with the pedestrian buffers, varying sidewalks and trails may be required based on the planned land uses. In general a minimum sidewalk width of 5 feet is to be provided within the street right-of-way section. If the walk serves as a recreational trail for use by both pedestrians and bicycles, a width of 8-12 feet will typically be required.

Landscaping and Lighting

Landscape and lighting elements not only add to the aesthetic features within the spaces along the roadway corridor, but also play a major role in how different modes of travel can safely interact with one another.

Well planned landscaping and lighting can reduce travel speeds of auto traffic and highlight areas near cross-walks and bus stops. Elements that are placed out of context can lead impede vision and create on-going maintenance issues.

Utility Corridors

City utilities such as water, sanitary and storm sewers as well as franchise utilities such as cable, telephone, gas and electric are important considerations in corridor design. A typical location of each utility needs to be established for consistency of location in developing areas.

City utilities running parallel to street corridors typically run within the public street corridor outside of the traveled roadway section. In some cases, in areas with reduced frontage setbacks, sanitary sewers may be placed underneath proposed street paving.

a. On-street parking (SW Vintage Parkway) b. Residential verge pedestrian buffer (NW 10th Street); c. Recreational Trail sidepath (SW State Street Future Promenade Park); d. Landscaping and Lighting (SW State Street);

e. Fire Hydrant in verge (NW Maple Street);

Figure 7.4: **Typical Cross-section Elements, Multi Lane Boulevards and Avenues**

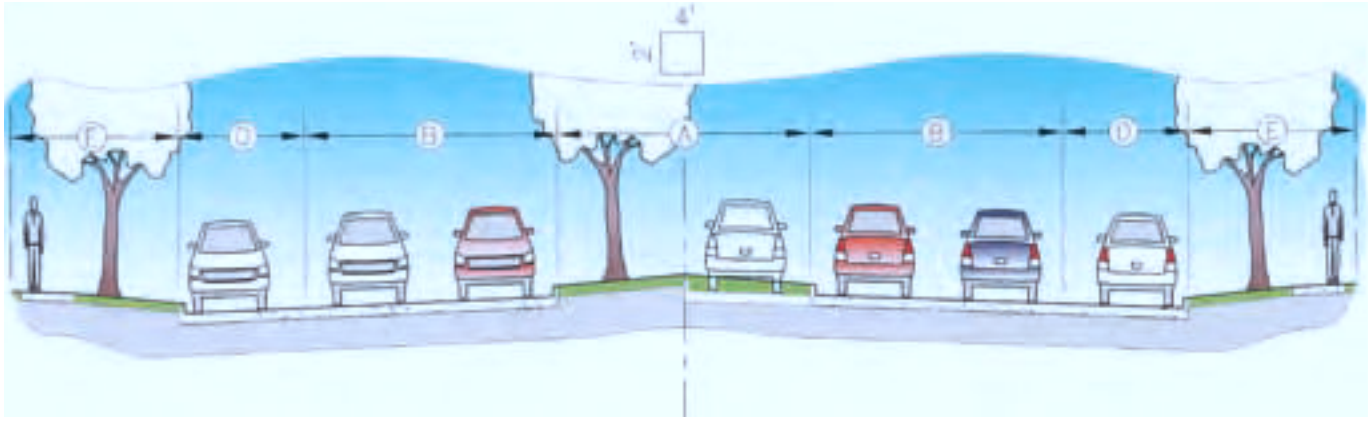


Figure 7.5: **Typical Cross-section Elements, Single-Lane Avenues and Streets**

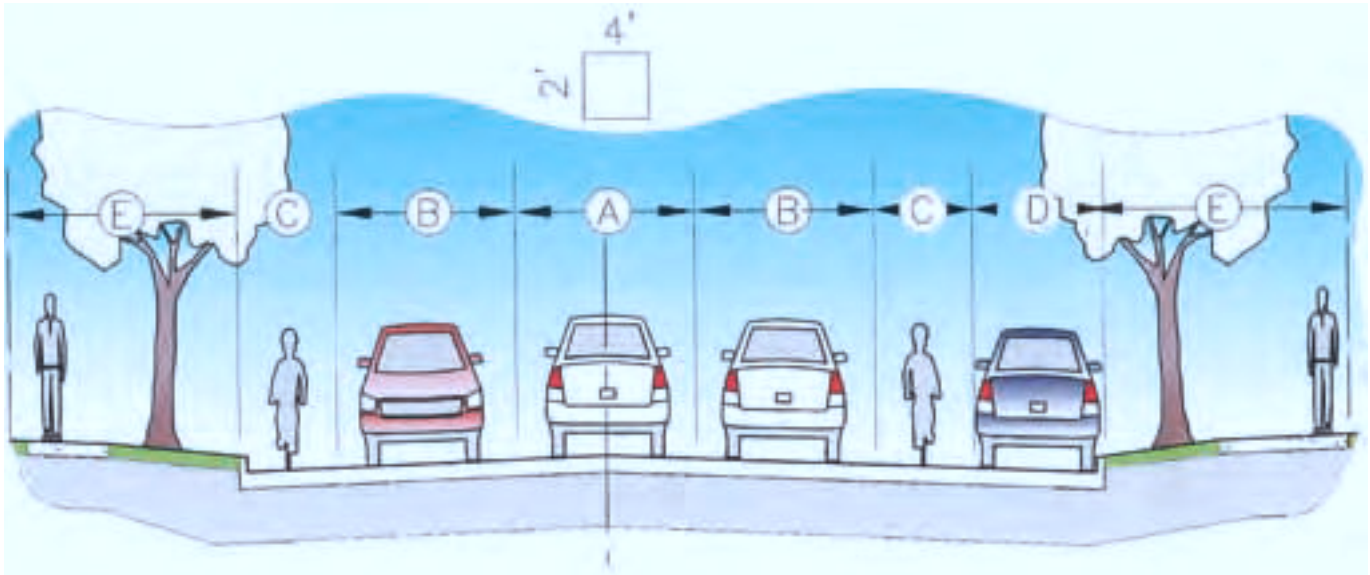


Table 7.3 Street Cross Section Guidelines

	A		B		C		D				E		
	Median		Travel Lanes		Bike Lane		Auxiliary Lane				Buffer		
							Lane Uses						
Street Type	Refuge Width	Travel Lane Width (where needed)	Number of Lanes	Travel Lane Width	Shared, Dedicated or None	Bike Lane Width	Auxiliary Lane Width	Bus Lane	Right Turn	On-Street Parking	Sidewalk/Trail Width	Sidewalk/Trail Width	Minimum Setback Width (1' seperation between walk/ trail and ROW)
Regional Highway	10'+	12'	4	12'+	N	--	12'	N	Y	N	Varies	--	by zone
Regional Boulevard	4'	12'	4	13.5'	N	--	12'	N	Y	N	10'	5' / 8'	by zone
Community Boulevard	8'	12'	4	12'	N	--	12'	Y	Y	Optional	10'	5' / 8'	by zone
Community Avenue	8'	11'	4	11'	N	--	--	N	N	N	10'	5' / 8'	by zone
Neighborhood Avenue	--	12'	2	11'	N	--	--	N	N	N	10'	5' / 8'	by zone
Community Street	--	11'	2	11'	D*	6'	7'	N	N	1-side	8'	5' / 8'	by zone
Shopping Street	--	10'	2	13'	N	--	10'/18'**	N	N	Y**	6'	6-8'	2-12'
Neighborhood Parkway	--	--	2	12'	S	--	8'	N	N	1-side	8'	5'	by zone
Neighborhood Street			2	10'	N	--	7'	N	N	1-side	8'	5'	by zone
Local Street			2	9'	N	--	7'	N	N	1-side	8'	5'	by zone

*Dedicated Bike Lanes are optional, to be applied in areas with higher levels of bicycle traffic
**Shopping Street Parking: 10' for parallel stalls, 18' for angled parking – on either or both sides

CROSS SECTION DESIGN ELEMENTS

- Lane Widths
- Medians
- On-Street Parking
- Pedestrian Buffers
- Sidewalks and Trails
- Landscaping and Lighting
- Utility Corridors

a. Aerial photo of intersection treatments (SW Vintage Parkway at SW State Street); b. Pedestrian Crosswalk and refuge (SW Precedence Parkway at SW Vintage Parkway); c. Pedestrian crosswalk and refuge (SW 18th Street at SW State Street); d. Sidewalks (SW Precedence Parkway);

Franchise utilities often share the verge and sidewalk spaces with City utilities, or require designated easement areas on private properties adjacent to the road right-of-way.

INTERSECTION DESIGN ELEMENTS

Intersections need to balance a variety of requirements from different users. Drivers want to pass through intersections with minimal delays and few conflicts. Large commercial vehicles and trucks need room to complete turning movements within the street area. Pedestrians and bicyclists need to be able to safely and comfortably cross at intersections and crosswalks.

The needs at each intersection are influenced by surrounding land use, design vehicle, desired modes of transit, travel speeds and use and interaction with the surrounding spaces. As such, intersection design will need to be completed on a case-by-case basis.

Provisions for Pedestrians and Bicycles

Where pedestrian and bicycle traffic is expected to be significant, intersections need to include design elements to make users feel it is safe to cross. This can be accomplished by better definition of cross-walks through pavement markings or brick pavers, a refuge areas in the center median, curb extensions to limit the width of travel lanes to be crossed, and reducing curb return radii where possible.

Provisions for Buses and Turning Traffic

To limit the width of pavement needed to be crossed by pedestrians and bicyclists, use of lanes dedicated to right-turning traffic and transit stops should be limited to only those areas where expected traffic or transit demand warrants their inclusion. Where needed, an "auxiliary lane" dedicated for turning traffic (or on-street parking away from the intersection) can also accommodate transit use by locating a bus stop in the same lane on the far side of the intersection.

Along transit corridors with heavy traffic, this allows the stop to be located where it will not impede travel in either the right turn or the outside through travel lane.

It is encouraged that designers reference Chapter 10 of the ITE Context Sensitive Solutions report for additional information and detail.

OTHER TRANSPORTATION GROWTH NEEDS

Freight Routes and Commercial Traffic

Attempts to try to accommodate use of the largest truck and freight traffic on all public streets can lead to overdesign of pavement sections and excessively large intersection return radii. The latter condition can make it more difficult for pedestrians and bicyclists to feel safe near intersections by increasing the length of pavement they need to cross, and allowing smaller vehicles to make turns at higher speeds.

For this reason, the City has established truck and freight routes to focus the majority of this type of traffic onto arterial streets and collector streets that serve commercial and industrial districts.

Other corridors are expected to handle only local deliveries, which are usually completed by much smaller vehicles. Intersections on freight routes need to accommodate the turning requirements of freight traffic, while providing provisions for safe use by pedestrians.

Long-Range Airport Plans

Long range improvement plans are detailed in the 2002 Ankeny Airport Master Plan.

Construction of a south terminal area that could accommodate an additional 230 aircraft is under consideration. This area may be accessed through extension

of SE Convenience Boulevard or by connection to Corporate Woods Drive.

An expansion of the primary runway to 6,000 feet is also planned.

REVIEW OF LONGER TERM NETWORK IMPROVEMENTS

In conclusion of this section, it is important to highlight several key system improvements needed to support future growth areas and fulfill the goals and principles described within this section.

- Development of the N 36th Street corridor as a context sensitive arterial connection between Polk City and Interstate 35. The goal is to provide mobility and access to growing areas along the corridor, while preventing this street from acting as a barrier between areas within the community.
- Continue to expand the existing system of trails to promote use of other forms of travel to commercial, employment and recreation centers. Continue integration of the local trail network into the larger regional network of trails.
- Plan to improve or construct overpasses across Interstate 35 at SE Magazine, NE 18th Street and NE 54th Street as growth continues east of the interstate to better integrate neighborhoods east and west of Interstate 35 and provide access for emergency services.
- Review existing street corridors and their surrounding land uses and identify opportunities for retrofits to corridors to improve access for other modes of travel.
- Review corridors with high traffic demand or where accidents frequently occur to determine required improvements to address these issues.
- Extend arterial corridors into developing areas, with each corridor having a specific role within the system and guided by concepts of context sensitive design.
- Review possible connections to the Northeastern Beltway as more specific information is developed about alignment and construction schedules.
- Accommodate creation of the North-South connector corridor as part of a regional transportation development effort. This may include working to reconfigure intersection alignments near the intersection of this corridor and NE 36th Street to provide a more direct connection between Polk City and Interstate 35 along NE 36th Street, and creating the potential for the North-South corridor to extend toward Ames in the future.

a. NE 36th Street; b. Ankeny Regional Airport; c. Existing Trail in Ankeny;

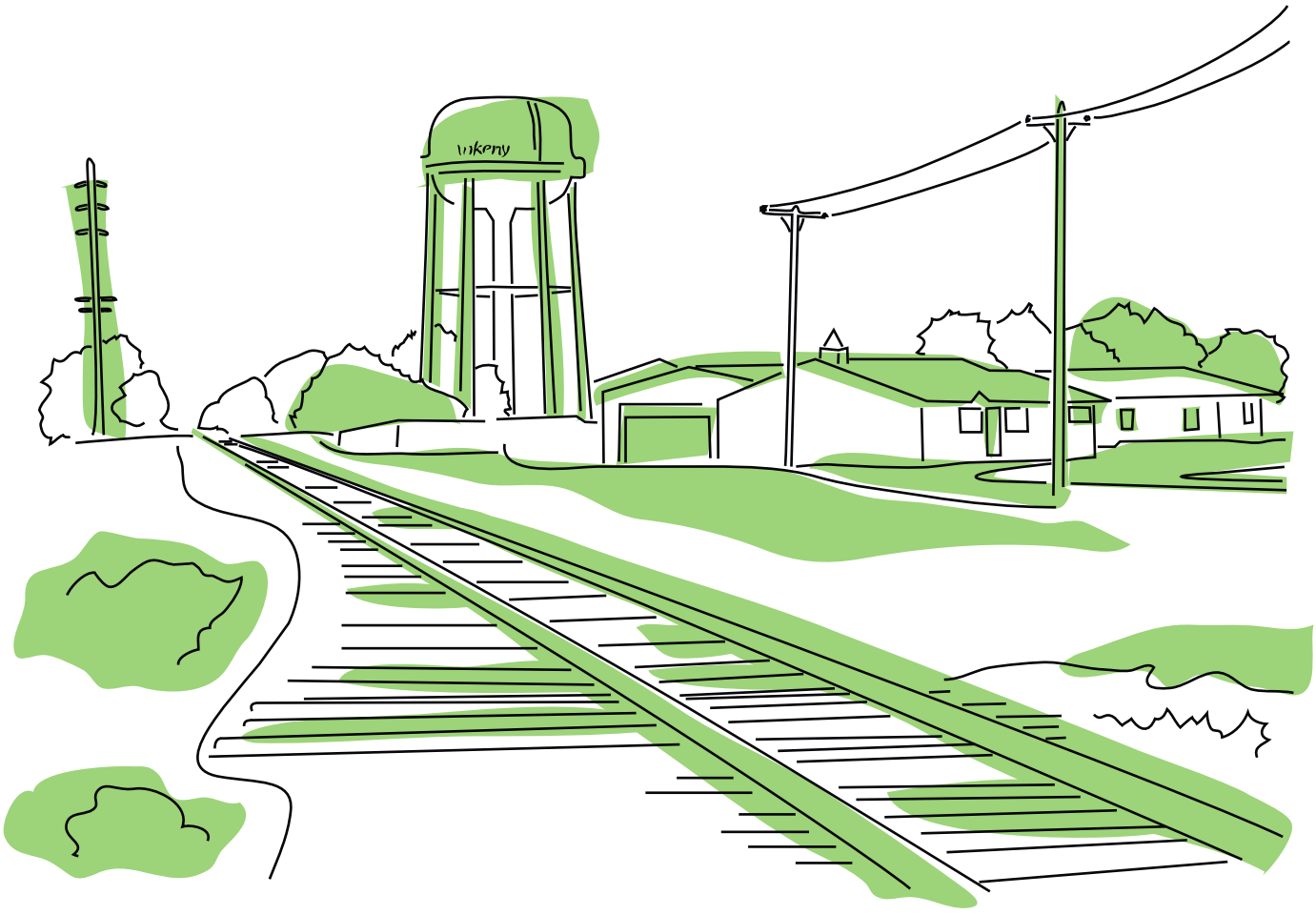
HIGHLIGHTED LONG TERM RECOMMENDATIONS

- Develop N 36th Street as a context sensitive arterial.
- Expand the system of trails.
- Improve connectivity across Interstate 35.
- Review existing corridors for retrofit opportunities.
- Address areas with high traffic or where accidents are most frequent.
- Extend arterial corridors into developing areas.
- Monitor planning of the Northeastern Beltway and plan for future connections.
- Support development of the North-South connector corridor.

8

INFRASTRUCTURE

This chapter discusses how the City's water and sanitary sewer systems can be maintained to high standards and how they can be updated to accommodate projected growth.



INTRODUCTION

The City of Ankeny's infrastructure systems are the framework for the City's basic operation and future growth. These systems operate quietly and provide basic municipal support for the lives of Ankeny's residents.

Many of the community goals and smart growth principles that have been outlined in other sections of this plan can only be fully achieved when issues surrounding water supply and sanitary sewer service are considered as central to the planning process.

The principle to provide infrastructure investments that correspond to the community's growth potential. Development should be managed to make the most efficient use of existing and future investments in infrastructure and public facilities.

The City must determine the appropriate timing for any public financing of new service extensions and improvement, considering the land use policies and community development goals of the Plan. Encouraging growth in areas contiguous to existing development and areas currently served by infrastructure, such as Prairie Trail, will maximize the efficiency of City services.

The principle to ensure new development sites are served with adequate, economical infrastructure. Although many of Ankeny's growth areas designated in Chapter 4 presently include adequate infrastructure, other growth areas will require extensions and improvements. Requirements will emerge for sanitary sewer interceptors, wastewater lift stations, new and looped water mains, and extensions of other utilities into developing areas.

The City should invest in new infrastructure with care; consideration must be given to the total public and private costs of new services. Public dollars must be spent wisely in providing services. The City should also be concerned with the size of private costs, to assure the continuation of orderly growth based on sound, market-related decisions.

The principle to provide a healthful, abundant water supply. A good water supply is a fundamental prerequisite for community growth. Obtaining, protecting and distributing an adequate source of water that meets health standards is one of the most important functions performed by a community. In addition, water pressures must be maintained for health, convenience, and to meet multiple and simultaneous demands by local residents.

Finally, water is an important instrument of public safety by maintaining adequate pressure to extinguish fires. The City must maintain and expand its present system to ensure reliability and meet ever-increasing water quality standards. In addition, the City must be vigilant in making strategic improvements to support desirable growth patterns.

The principle to match Ankeny's desired future land use pattern with its most cost-effective wastewater service strategy. The City must be certain in determining the pattern of sanitary sewer interceptors, lift stations, and force mains to complete its development pattern. In addition, the City must ensure that costs of these improvements are equitably distributed and services provided in a planned, phased sequence that promotes development.

The goal of this chapter is to provide citizens, designers, City staff and potential developers with the knowledge to make more informed choices for the route and sizing of infrastructure that will extend to development areas; and effectively manage the water and sanitary sewer systems to reduce or prevent negative impacts to public and private property throughout the City.

Various sources of GIS data have been reviewed to complete this portion of the comprehensive plan. Aerial photographs were used in concert with LIDAR topographic information to locate drainageways and flowpaths in future development areas for generally locating sanitary sewer interceptors.

Various other resources such as studies completed by City staff and studies completed by consultants that pertain to the water and sanitary sewer systems were reviewed and included in this Chapter.

ISSUES SURROUNDING WATER SUPPLY AND SANITARY SEWER SERVICES

- The principle to provide infrastructure investments.
- The principle to ensure new development sites.
- The principle to provide a healthful, abundant water supply.
- The principle to match Ankeny's desired future land use pattern.

CITY OF ANKENY WATER SYSTEM

FACTS AND ANALYSIS

A Water System Facility Plan was authorized and completed in 2002 with revisions in June and July of 2006. The plan analyzed alternatives for source investigation, source capacity, treatment, storage, and distribution. The intent was to develop a plan to provide quality water of adequate quantities both currently and into the future as the City continues to grow. The recommendations selected by the City of Ankeny from the 2002 Facility Plan to meet future water demands are presented in the sections to follow.

The City of Ankeny currently purchases all of its domestic water supply from Des Moines Water Works (DMWW). Prior to the completion of the final revision of the 2002 Facility Plan in July 2006, the City of Ankeny City Council made the determination that they would continue to purchase their water supply from the DMWW in the future. The current agreement gives the City of Ankeny of total available capacity of 13.92 million gallons per day (MGD). However, depending on the water demand required by Ankeny, the rates for purchasing treated water from DMWW vary.

The concept of "Purchased Capacity" was introduced as part of the most recent agreement. This allowed the City of Ankeny to buy down their wholesale water rates by making an upfront capital contribution to the DMWW. The agreement gives the City of Ankeny a total of 8.28 MGD purchased capacity in the DMWW. The agreement states that the City of Ankeny can draw water from the DMWW system up to 8.28 MGD and pay the lower wholesale water rate (purchased capacity rate). If the City draws water at a daily rate exceeding 8.28 MGD, the cost of water would be impacted during the succeeding water purchase year and a portion of the water purchased would be at a higher rate (with storage rate). For example, if the City draws water at a daily rate of 10 MGD, 82.8% (8.28/10) of the water purchased the following year would be at the "purchased capacity rate" and the remaining 17.2% of the water purchased the following year would be at the "with storage rate".

The current rates to be effective in April 2010 are the following: "Purchased Capacity Rate" = $1.16 / 1000 gallons; "With Storage Rate" = $2.74 / 1000 gallons. Since the "With Storage" rate is significantly higher than the "Purchased Capacity" rate, drawing water from the system at a larger rate than purchased capacity rate can result in a significant increase in the cost of water.

Water Supply and Treatment

The City of Ankeny has a current average day demand of 4.22 MGD. The City had a peak day demand in 2006 of 10.3 MGD. The projected average and peak day demand according the 2002 Facility Plan are shown in Table 9.1.

There are three feeder mains transporting water from DMWW to the City of Ankeny. Refer to Figure 9.1 for a representation of the feeder mains. There is a 16" feeder main on Delaware Avenue which

Table 9.1: **Projected Average and Peak Day Demand (2002 Facility Plan)**

Year	Population	Average (MGD)	Peak (MGD)
2010	43,148	5.39	12.95
2020	60,000	7.50	15.00
2030	80,000	10.00	20.00
2040	100,000	12.50	25.00

ANKENY WATER SYSTEM FACTS

- The City of Ankeny currently purchases all of its domestic water supply from Des Moines Water Works (DMWW).
- The City has a current average day demand of 4.22 MGD.
- There are three feeder mains transporting water from DMWW to the City:
  - 16" feeder main on Dela ware Ave;
  - 24" feeder main on NE 14th Street;
  - 24" feeder main on NW 26th Street;
- The City currently has three storage facilities:
  - Ash Water Tower
  - Magazine Pumping Station
  - Southwest Water Tower
- All three existing storage facilities provide a total of 3.5 MG of storage.

provides water to the Delaware Pumping Station (DPS). There is a 24" feeder main on NE 14th Street (Hwy 69) which provides water to the Polk County and Ankeny Pumping Station (PCPS). There is a 24" feeder main on NW 26th Street which provides a connection to Ankeny's system near the intersection of NW 26th Street and Oralabor Road. This connection will be the primary source water entry point from the DMWW Saylorville Treatment Plant which is scheduled for completion in the spring/summer 2010. This connection is currently fed from the DMWW Fleur Drive Treatment Plant.

The City of Ankeny has a fourth entry point for water from DMWW off the 16-inch Polk City feeder main. The connection is located near the intersection of NW 5th Street and Highway 415 on the west side of the City. The connection is sized for 1 MGD and includes a meter pit. The water from this entry point ultimately comes from the 24" feeder main on NW 26th Street.

The PCPS is located south of Ankeny on NE 14th Street, just north of NE 58th Avenue. The PCPS has an available capacity of 7.5 MGD to the City of Ankeny. This station alone can meet the current average day water demand for the City. The PCPS also includes chlorination facilities to boost the chlorine residual in the treated water. The PCPS was reported to be in good operational and physical condition in the 2002 Facility Plan.

The DPS is located south of Ankeny on Delaware Avenue between NE 66th Avenue and NE 70th Avenue. The DPS has an available capacity of 2.5 MGD to the City of Ankeny. The DPS also includes chlorination facilities to boost the chlorine residual in the treated water. The DPS is used mainly to supplement the PCPS during periods of high water demand. The DPS was reported to be in good operational and physical condition in the 2002 Facility Plan.

To avoid the penalty rate charged for water use which exceeds the "Purchased Capacity" rate of 8.28 MGD, the City of Ankeny uses an Aquifer Storage and Recovery System (ASR) in two locations. The first ASR is located on SW Elm Street in a residential neighborhood, approximately 1 block south of SW 3rd Street, and the second ASR is located on the north side of NE 36th Street, approximately 1/4 mile east of Delaware Avenue. Refer to Figure 9.1 for a map of the locations of the ASR wells. Ankeny's ASR's utilize deep Jordan aquifer wells approximately 2,700 feet deep. An ASR stores treated water in an underground aquifer by drawing water from the distribution system during periods of low demand and recharging the aquifer. The water is then pumped back into the distribution system with the ASR well pump during periods of high demand. The ASR well located on Elm Street has a capacity of approximately 1.15 MGD, and the ASR on NE 36th Street has a capacity of approximately 3.0 MGD. The ASR's are used to provide seasonal peaking water during periods of high water demand in the City. The ASR located on SW Elm Street is planned to be abandoned in the near future, but the City plans to operate the ASR until the equipment is no longer feasible to maintain.

The source capacity for the combination of all four connections from DMWW is 13.92 MGD. The total capacity can come from any combination of the four connections, provided each connection is limited by its infrastructure capabilities. The ASR wells provide an additional capacity of 4.15 MG. This brings the existing source capacity for the City of Ankeny to 18.07 MGD. However, this source capacity can only be sustained for short periods of time during high water demand.

Water Storage

The City of Ankeny provides treated water storage independently of water supply and treatment. The City currently has three storage facilities: 1) Ash Water Tower 2) Magazine Pumping Station Ground Storage and 3) Southwest Water Tower. Refer to Figure 9.1 for a map of the locations of the existing storage facilities.

The Ash Water Tower provides 0.5 million gallons (MG) of storage capacity. The Ash Water Tower is located on NW Ash Drive approximately 2 blocks north of West 1st Street (just northwest of the fire station).

The Magazine Pumping Station (MPS) provides 1 MG of ground storage capacity, but only 0.5 MG of effective storage capacity. The tank was originally constructed to provide fire protection for the industrial area in southeast Ankeny. In order to provide adequate fire protection, only 0.5 MG can be used by the distribution system. The MPS is located south of the intersection of SE Magazine Road and SE Trilein Drive.

The Southwest Water Tower provides 2.5 MG of storage capacity. The Southwest Water Tower is located on SW Irvinedale Drive, approximately 750 feet south of NW 84th Avenue. The Southwest Water Tower was put into service in December 2009.

All three existing storage facilities provide a total of 3.5 MG of storage. Table 9.2 shows the facility and corresponding storage capacity.

Table 9.2: **Water Storage Facility By Storage Type**

Facility	Storage Type	Storage Volume (MG)
Ash Water Tower	Elevated Storage	0.5
Magazine Pumping Station	Ground Storage	0.5
Southwest Water Tower	Elevated Storage	2.5
Total Storage		**3.5 MG**

Distribution

The City of Ankeny's distribution system consists of 230+ miles of water mains ranging from 4-inch to 24-inch in size. The City has recently converted to two separate pressure zones. Refer to Figure 9.2 for a visual representation of the boundaries of the second pressure zone. The main pressure zone encompasses the majority of the City including generally the north side, east side, south side, and central area. The pressure in the main pressure zone ranges between 40 psi to 90 psi depending upon ground elevations within the zone. The second pressure zone includes the far west and far northwest part of the City. Generally, the zone includes everything west of NW Weigel Drive to a point 1/2 mile north of NW 18th Street and everything west of NW Irvinedale Drive north beyond that point to the City limits. The pressure in the second pressure zone is generally around 50 psi. The ground elevation in the second pressure zone is a little higher than the other parts of the City. The source water for the second pressure zone is fed from the connection to the Polk City feeder main which provides a little higher pressure for the area than what the main pressure zone can deliver. The City has taken steps to limit the connections between the pressure zones and plans to continue that into the future. The distribution system in both pressure zones is in generally good condition and adequately sized for existing service.

The backbone of the distribution system is 12-inch water mains on a one-mile grid pattern. Refer to Figure 9.1 for a map of the existing distribution system. This grid is supplemented with 10-inch and 8-inch water mains. This system is believed to be satisfactory for current growth and growth projections.

Current concerns within the distribution system include the original undersized water mains in the downtown area, areas fed only by a single source, and filling in gaps within the current City. The downtown area has a network of 4-inch and 6-inch water mains. These mains currently do not provide adequate fire protection. These smaller mains were recommended to be replaced with 8-inch water mains. In addition, the following areas are of future concern:

Larger 16" or 24" water mains are recommended between the Ash Water Tower and the Southwest Water Tower to reduce friction loss and level the hydraulic grade between the two water towers.

Larger 24" feeder main is recommended along Oralabor Road from NW 26th Street to Ankeny Blvd. to increase feeder capacity.

16" water main along Ankeny Blvd. from Shurfine Drive to Magazine Road to fill in the gap and increase feeder capacity.

16" water main along Ankeny Blvd. from 3rd Street to the railroad tracks to increase feeder capacity.

12" water main along State Street from W. 1st Street to High Trestle Trail to increase feeder capacity.

POLICIES AND ACTIONS

The 2002 Water System Facility Plan analyzed short-term and long-term alternatives for the system. The City of Ankeny has connected to the DMWW through the Polk City feeder main along Hwy 415 to supply water to the west side of the City to meet short-term demands. This connection has begun the initial steps to convert the far west and northwest side of the City to a second pressure zone. For long-term demands, the City has acquired additional treated water supply from the DMWW.

The City currently has an agreement with DMWW for a total available capacity of 13.92 MGD. The DMWW is in the process of completing construction of their Saylorville Water Treatment Plant southwest of Ankeny. The 2002 Facility Plan indicated an initial proposed source of 6.0 MGD from the Saylorville Water Treatment Plant. The completion of the plant would bring the City to their current total available capacity of 13.92 MGD (6 MGD from Saylorville Water Treatment Plant + 7.92 MGD from PCPS and DPS).

a. Ankeny Water Tower

The 2002 Facility Plan recommended installation of a booster pumping station to establish the pressure in the second pressure zone. The booster station would be located on the south side of the City and pump water to the northwest part of the City. The Plan recommended to develop the distribution grid to minimize connection points between the two pressure zones.

The 2002 Facility Plan also indicates the need for the City to increase their source water and storage by year 2020. The Facility Plan indicated a projected population of 60,000 by year 2020. That population equates to an average day water demand of 7.5 MGD and a peak day water demand of 15.0 MGD.

At these demand rates, the 2002 Facility Plan recommended a source capacity of 19.92 MGD and a storage volume of 5.25 MGD. The 2002 Facility Plan recommended an ASR well to provide 3.0 MGD of additional source capacity and recommended an elevated storage tank to provide an additional 2.5 MG of storage volume. This

would bring the source capacity for the City to 19.92 MGD and a storage capacity of 6.0 MG. The additional elevated storage tank is proposed to be located on a site bound by NW 110th Street, NW 26th Street, NW 118th Avenue, and NW 44th Street. The tank will be located in the second pressure zone and installed at a higher hydraulic grade line (HGL) to establish the higher pressure. The additional ASR is proposed to be located on land east of NW 26th Street that is currently planned for a park area. Refer to Figure 9.3 for locations of the future tower and ASR. It should be noted these recommendations were based on actual population as opposed to the year presented. The existing ASR on SW Elm Street was not included in the source capacity since the 2002 Facility Plan recommended to abandon the ASR once a more reliable water supply is developed for the City.

To reduce the total water system demand, wells were suggested in the 2002 Facility Plan for use in irrigation. One well adjacent to the Prairie Ridge Youth Sports Complex is underway to conserve water demand. No additional wells are planned by the City at this time, but could be constructed as water demand increases.

The 2002 Facility Plan also projected the water system out to year 2060. The projected population in 2060 was 140,000, the projected average day water demand was 17.50 MGD, and the projected peak day water demand was 35.00 MGD. At year 2060, the proposed source capacity was 39.92 MGD and the proposed storage capacity was 14.0 MG. Past year 2020, the Plan recommended that the City negotiate with DMWW for additional capacity in the Saylorville Water Treatment Plant. DMWW has indicated that as much as 20 MGD will be available from the Saylorville Water Treatment Plant in the future. This would give the City as much as 27.92 MGD source capacity from DMWW.

Additional capacity with two new ASR wells are recommended between year 2020 and 2060 to bring the total source capacity to as much as 39.92 MGD (DMWW at 27.92 MGD + 4 ASR wells at 12.00 MGD).

Two or three additional storage tanks are recommended to provide the required additional storage capacity past year 2020. The locations of the additional ASR wells and storage tanks would be determined in the future. At minimum between year 2020 and 2035, one ASR well and one storage tank would need to be constructed if growth projections are accurate.

The 2002 Facility Plan recommended the City should maintain the current system of providing 12-inch water mains on a one-mile grid and 8-inch water mains on a half-mile grid as the City expands. Refer to Figure 9.3 for the locations of additional water mains to serve future development areas. The Plan also recommended the City proceed with the replacement or reinforcement of the smaller water mains in the older portions of the City to improve fire flows in that area.

CITY OF ANKENY SANITARY SEWER SYSTEM

FACTS AND ANALYSIS

The last major sanitary sewer facility plan update for the City of Ankeny was completed in 1995. The City of Ankeny has made major changes in both infrastructure and philosophy since 1995 so most of the information from that update does not apply to the current sanitary sewer system.

Background information of the sanitary sewer system included in the following sections was taken from a number of different studies and reports completed over the last 10 years. These reports are listed below:

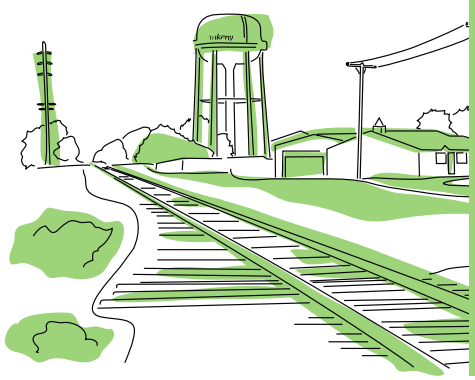
Golf View Acres Area Sanitary Sewer Feasibility Study for Ankeny completed in March 1998 by Veenstra & Kimm, Inc.

2003 Northern Trunk Sewer Preliminary Design Summary for Ankeny completed in 2003 by Fox Engineering & Associates.

Saylor Creek Basin and Rock Creek Basin Facility Plan Update for Polk City completed in March 2005 by Veenstra & Kimm, Inc.

Golf View Acres Area Revised Cost Estimates for Ankeny completed in January 2006 by Veenstra & Kimm, Inc.

Sanitary Sewer Investigation Report for



Assumptions for generating sanitary sewer flows from development areas are 100 gallons per capita per day and also include the following:

- Low Density Residential – 3 units per acre, 3.3 people per unit, Standard Peaking Factor based on population.
- Medium Density Residential – 6 units per acre, 3 people per unit, Standard Peaking Factor based on population.
- High Density Residential – 15 units per acre, 2.5 people per unit, Standard Peaking Factor based on population.

Polk County completed in January 2007 by Snyder & Associates.

Sanitary Sewer Investigation Report Executive Summary for Polk County completed in February 2007 by Snyder & Associates.

Rock Creek Sanitary Trunk Sewer Segments 1, 2, & 3 & Rock Creek Lateral Sanitary Sewer Facility Plan for Polk County completed in November 2008 by Snyder & Associates.

Sanitary Sewer Capacity Study Analysis and Recommendations for Ankeny completed in December 2008 by Veenstra & Kimm, Inc.

Southeast Area Improvements Phasing Plan for Ankeny completed in January 2009 by Veenstra & Kimm, Inc.

Rock Creek Sanitary Trunk Sewer Segments 4 & 5 Facility Plan for Polk County completed in August 2009 by Snyder & Associates.

Other background information was obtained from City staff pertaining to the existing system and future development areas. This background information is included and summarized in the sections to follow.

The 1995 Facility Plan set policies for Ankeny that provided some long range planning guidance. The main policies are as follows:

- Provide sanitary sewer service only to areas located within corporate limits.
- Areas outside the corporate limits were evaluated as part of the long term planning strategy.
- If areas are located within the corporate limits of the City of Ankeny and within the planning boundary, sewer service would be provided by Ankeny.

Sanitary sewer service availability is a major factor in determining what area of the City is most feasible for development. City staff has been driven by landowners and developers to research several areas for proposed sewer service. The City has taken it upon themselves to research the sanitary sewer basins topography and service availability. The City has developed preliminary alignments, sizes, and slopes for trunk sewers that will extend into future development areas. The information provided by the City was integrated with information from the reports and studies indicated above and summarized in the sections to follow.

Wastewater Treatment

The City of Ankeny is currently operating a 12 million gallon per day (MGD) wastewater treatment plant (Southeast Water Pollution Control Plant). All wastewater from the City of Ankeny is currently routed to the plant for treatment and ultimate discharge to Four Mile Creek. The Southeast Water Pollution Control Plant consists of activated sludge treatment with ultraviolet disinfection. The plant also consists of a 5 million gallon (MG) flow equalization basin. The flow equalization basin detains wastewater during periods of high flow so the treatment plant is not overloaded. Once the flows drop to a normal level, the wastewater detained in the equalization basin is treated through the plant.

Wastewater Reclamation Authority (WRA)

The City of Ankeny made the decision to connect to the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) in 2003. This decision will ultimately result in discontinuing use of the Southeast Water Pollution Control Plant. Discontinuing use of the plant is contingent on the completion of construction of the WRA Four Mile Interceptor Sewer. The WRA Four Mile Interceptor Sewer is a 60-inch diameter sanitary sewer and extends from the Des Moines Wastewater Reclamation Facility to the treatment plant in Ankeny. The sewer is completed to a point on the east side of Four Mile Drive approximately 1 mile south of Oralabor Road. The remaining portion of the sewer generally follows the west side of Four Mile Creek to the Southeast Water Pollution Control Plant and is scheduled

Assumptions (Continued)

- Very High Density Residential – 30 units per acre, 2.5 people per unit, Standard Peaking Factor based on population
- Standard Commercial – 3,000 gallons per acre, Peaking Factor = 1
- Dense Commercial – 5,000 gallons per acre, Peaking Factor = 1
- Park – No flow
- Elementary School – 50 students per acre, 15 gallons per student per day, Peaking Factor = 1
- Middle School and High School – 40 students per acre, 20 gallons per student per day, Peaking Factor = 1
- Open Space – No Flow
- Office/Business Park – 3,000 gallons per acre, Peaking Factor = 1
- Mixed Use – 3,000 gallons per acre, Peaking Factor = 1
- Dense Mixed Use – 5,000 gallons per acre, Peaking Factor = 1
- Civic – 3,000 gallons per acre, Peaking Factor = 1

for completion by 2011.

Once the WRA Four Mile Interceptor Sewer is constructed, the City will discharge all of its wastewater flows to this sewer and ultimately to the Des Moines Wastewater Reclamation Facility. The Southeast Water Pollution Control Plant will be abandoned. However, the WRA will continue to operate and maintain the flow equalization basin at the treatment plant site.

Existing Collection System

The existing collection system consists of sanitary sewers ranging from 6-inch to 48-inch in size with various types of pipe materials. There are four main trunk sewers that currently serve the existing portions of the City. Refer to Figure 9.4 for a representation of the existing sanitary sewer system.

1. Northern Interceptor
2. Four Mile Interceptor
3. Southern Interceptor
4. West Outfall

The Northern Interceptor extends from the treatment plant area north to 18th Street where it meanders through developments and ultimately runs west on 18th Street to the High Trestle Trail (old UP railroad). It then turns north and extends to NW 36th Street. The Northern Interceptor serves the north central, central, and into the NW portions of the City. The Northern Interceptor also currently receives flow from the Rock Creek basin on the west side of the City via the Rock Creek lift station.

The Four Mile Interceptor extends form the treatment plant area south of 1st Street north along Four Mile Creek. The Four Mile Interceptor will serve future development in the Deer Creek basin. The Deer Creek Trunk Sewer extends east along Deer Creek from the Four Mile Interceptor, approximately 1/3 mile north of E. 1st Street. The Deer Creek Trunk Sewer will serve future development in the Deer Creek basin. The Four Mile Interceptor splits into the North Four Mile Trunk Sewer and the Otter Creek Trunk Sewer just west of Interstate 35 (I-35) on the north side of 18th Street. The North Four Mile Trunk Sewer continues northerly along Four Mile Creek until 36th Street where it splits into north branch and the west branch.

The north branch of the North Four Mile Trunk Sewer continues northerly along Four Mile Creek and currently terminates at the intersection of Four Mile Creek and NE 54th Street. The west branch of the North Four Mile Trunk Sewer continues west along 36th Street and veers northwesterly to its current termination point along NW Ash Drive, approximately 1/4 mile north of 36th Street. The North Four Mile Trunk Sewer (both branches) serves the northern part of the City west of I-35 and will serve future development in the North Four Mile basin. The Otter Creek Trunk Sewer extends north-northeast along Otter Creek and currently terminates east of I-35 approximately 1/3 mile north of 36th Street. The Otter Creek Trunk Sewer will serve future development east of I-35 in the Otter Creek basin.

The Southern Interceptor extends south from the treatment plant along the west side of I-35 to approximately 1/2 mile south of Oralabor Road. From there, the Southern Interceptor extends west into the far southern portions of the City. The Southern Interceptor serves the southeast and far south parts of the City. The Southern Interceptor also receives flow from the West Outfall via the Saylor Creek lift station.

The West Outfall Trunk Sewer extends north from the Saylor Creek lift station (located east of State Street, south of Oralabor Road, north of Ankeny Road, along a tributary to Saylor Creek). The West Outfall generally follows State Street north up to the High Trestle Trail (old UP railroad). The West Outfall serves the west, west central, and southwest parts of the City and includes future development in Prairie Trail. The West Outfall drains to the Saylor Creek lift station. The Saylor Creek lift station has a firm capacity of 10.36 MGD. Wastewater is pumped from the Saylor Creek lift station east to the Southern Interceptor.

Another area of the existing collection system is the area served by the Rock Creek lift station. The Rock Creek lift station is located along Rock Creek on the north side of W. 5th Street. The lift station has a firm capacity of 2.74 MGD. This lift station serves the far western reaches of the City to Hwy 415. The Rock Creek lift station pumps wastewater to a trunk sewer along State Street which ultimately drains to the Northern Interceptor along 18th Street. This lift station will be taken off line once the Rock Creek Trunk Sewer is complete on the west side of Ankeny.

An existing area east of Four Mile Creek and north of Oralabor Road is served by the Oralabor lift station. The Oralabor lift station is located on the north side of Oralabor Road west of Four Mile Creek. The lift station has a firm capacity of 0.36 MGD. This lift station serves some commercial development west of Four Mile Creek and a residential development east of Four Mile Creek. The lift station pumps wastewater to a smaller gravity trunk sewer which drains to the treatment plant. The area this lift station serves will ultimately be served by the WRA Four Mile Interceptor Sewer as part of the Oralabor basin.

The existing Corporate Woods area is served by a small gravity trunk sewer which outlets to an existing portion of the WRA Four Mile Interceptor Sewer.

Concerns with the Existing Collection System

A portion of the North Four Mile Creek Trunk Sewer (a branch of the Four Mile Interceptor) extending from 36th Street south-southeast to Delaware Avenue was not sized for the current North Four Mile basin growth area. The North Four Mile basin growth area has expanded since

the planning was done for the sewer. At some point in the future as development occurs, a parallel sewer will need to be installed to provide the additional required capacity.

Continued growth in the Rock Creek basin coupled with growth in the drainage basin for the Northern Interceptor could potentially overload the Northern Interceptor trunk sewer. The City has recently made the decision to participate in the construction of the Rock Creek Trunk Sewer to the west side of Ankeny which would benefit Ankeny, Polk County, and Polk City. The Rock Creek Trunk Sewer would be extended from its existing termination point to the Rock Creek lift station. When the sewer is constructed, the City has made the decision to take the Rock Creek lift station off line and send the flow down the Rock Creek Trunk Sewer. This would provide additional growth capacity in the drainage basin served by the Northern Interceptor.

Continued growth in the Prairie Trail development area (old ISU research farm) could potentially overload the Saylor Creek lift station and subsequently the Southern Interceptor trunk sewer. The City will continue to monitor the flows to this lift station as development occurs. The City may need to add capacity to the Saylor Creek lift station and force main and add parallel sewer capacity to the Southern Interceptor if growth exceeds their capacities. One thought was to take the Saylor Creek lift station off line with the construction of a WRA gravity sewer to the lift station location. However, concerns with downstream capacity in the WRA sewer system have taken this option off the table.

The Golf View Acres area of the City of Ankeny does not currently have sewer service. This area is generally located south of NW 5th Street and west of NW Irvinedale Drive. The original feasibility study completed by Veenstra & Kimm, Inc. in 1998 concluded that most of this area could not be served by gravity sewer and would require the wastewater to be pumped to the existing gravity system. Since the City decided to participate in construction of the Rock Creek Trunk sewer, the new sewer will provide a gravity outlet for the Golf View Acres area. The existing study was updated in January 2006, and it was determined feasible to provide gravity sanitary sewer service to this area. The City plans to construct these improvements in the near future to provide sanitary sewer service to the Golf View Acres area.

The sanitary sewer system experienced sewer backups in key trunk sewers during high flow events during 2007 and 2008. Veenstra & Kimm, Inc. completed a sanitary sewer capacity study in 2008 on the following trunk sewers:

- SE 3rd Street Trunk Sewer
- SE 2nd Street Trunk Sewer
- SE 8th Street Relief Sewer
- NE 5th and NE 7th Street Trunk Sewer
- Upper reaches of the West Outfall Trunk Sewer

The sanitary sewer capacity study recommended the following actions to address the sewer backups:

1. A 24-inch relief sewer constructed from Delaware Avenue to westerly on SE Uehlamar to SE Trilein Drive and north on SE Trilein to SE Third Street
2. An 18-inch relief sewer constructed from SE Uehlamar to SE Peterson and then west along SE Peterson to SE Sharon Drive.
3. A 15-inch short interconnect relief sewer on SE Sharon Drive between SE 2nd Street and SE 3rd Street.
4. A 15-inch relief sewer constructed along NE 5th Street between NE Wanda and NE Sharon Drive.
5. A 24-inch relief sewer constructed from the John Deere lift station to W 1st Street.
6. Once equalization of the Rock Creek Trunk sewer flows is complete, divert flow from the West Outfall system to the Rock Creek system.

The total estimated cost of these improvements in December 2008 dollars is $4,939,000. This estimate does not include the cost of diverting flow to the Rock Creek basin since the recommended improvements are preliminary. A revised cost estimate for improvements 1, 2, and 3 above was developed in January 2009 to phase these improvements with storm sewer improvements. The estimated costs for improvements 1, 2, and 3 above was $2,600,000. Adding improvements 4 and 5 to the revised costs for improvements 1, 2, and 3 brings the total to $4,837,000.

POLICIES AND ACTIONS

WRA Option

The City of Ankeny made the decision to connect to the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) in 2003. In the future, the City will discharge all of its wastewater to two main trunk sewers:

- WRA Four Mile Interceptor Trunk Sewer
- Rock Creek Trunk Sewer

It should be noted the Rock Creek Trunk Sewer will originally be owned by Polk County, but it is the intention to transfer ownership of the sewer to the WRA to become part of the WRA's collection system.

The WRA Four Mile Interceptor Trunk Sewer, as discussed above, extends from the Des Moines Wastewater Reclamation Facility to the City of Ankeny. The sewer will ultimately be extended to the City's Southeast Water Pollution Control Plant. When the sewer is completed, the City will discontinue use of the plant for wastewater treatment. The WRA will continue to use the flow equalization basin at the plant for mitigating high wet weather flows. The WRA Four Mile Interceptor Trunk Sewer has a capacity of approximately 46 MGD at its most restric-

tive point. The majority of the wastewater flow from Ankeny will be discharge to this sewer. All flows from the Four Mile Interceptor, Northern Interceptor, Southern Interceptor, and West Outfall trunk sewers will ultimately discharge to the WRA Four Mile Interceptor Trunk Sewer. The WRA Four Mile Interceptor Trunk Sewer is expected to be completed in 2011. In discussing with City staff, it is believed there is adequate room for development in the WRA Four Mile Interceptor Trunk Sewer.

The Rock Creek Trunk Sewer is a 5 segment project that will provide gravity sewer service to the west side of Ankeny. The trunk sewer will connect to the existing WRA Saylor Creek Interceptor Trunk Sewer. The WRA Saylor Creek Interceptor is a 30-inch sanitary sewer which currently terminates along NW 6th Drive at NW 62nd Avenue south of Ankeny. The Rock Creek Trunk Sewer is proposed to connect to the Saylor Creek Interceptor at that termination point. Segments 1, 2, & 3 of the trunk sewer will extend northwesterly to the point where Rock Creek crosses NW 37th Street, then run northeasterly and then northerly along Rock Creek to intercept the outfall sewer to the Rock Creek lift station. The Rock Creek trunk sewer will intercept wastewater flow from the far west side of the City that drains to the Rock Creek lift station. The sewer will also serve any future development in the Rock Creek basin. Segments 1, 2, & 3 of the Rock Creek Trunk Sewer are expected to be completed to the Rock Creek lift station in 2010.

The Rock Creek Trunk Sewer will serve three entities: City of Ankeny, Polk County, and Polk City. The trunk sewer is intended to serve unincorporated areas west and south of Ankeny in Polk County, the entire City of Polk City, and the Rock Creek basin in Ankeny. Segment 4 of the Rock Creek trunk sewer project will extend the gravity sewer north and west into the Rock Creek basin as far as gravity sewer is practical to a point along NW 110th Avenue between NW 37th Street and NW 44th Street. Segment 5 of the Rock Creek Trunk Sewer project includes Polk City constructing two pumping stations with associated force mains to connect to the gravity sewer termination point of Segment 4. Polk City will covert their existing aerated lagoons to a flow equalization basin. Segments 4 & 5 of the Rock Creek Trunk Sewer project are scheduled to be completed by 2012.

The City of Ankeny's "near future" capacity in the Rock Creek Trunk Sewer is 3.23 MGD. The sewer will be designed for the ultimate build-out of the service area including portions of undeveloped Polk County, Polk City, and Ankeny's Rock Creek basin. However, due to downstream capacity limitations in the WRA sewer system, the entire capacity of the sewer will not be able to be used in the near future. With potential mitigation of high flows with flow equalization, the capacity allotted to Ankeny may increase in the future.

It is recommended that further study review an option to use the existing Rock Creek lift station to balance future flows and maximize capacity between the Northern Interceptor and Rock Creek basins. This will require more detailed review of the available capacity in each service area.

Sanitary Sewer Development Basins

The City of Ankeny has seven main sanitary sewer basins for future development (Refer to Figure 9.4 for a map of the basins):

1. North Four Mile Basin
2. Northern Interceptor Basin
3. Otter Creek Basin
4. Deer Creek Basin
5. Oralabor Basin
6. Corporate Woods Basin
7. Rock Creek Basin

North Four Mile Basin - The North Four Mile basin will serve future development of an area generally bound north of 36th Street, west of I-35, and east of State Street. Fox Engineering completed a preliminary design for trunk sewers in this basin in 2003. They recommended a series of trunk sewers to be constructed and also laid out future trunk sewers. A portion of the trunk sewers studied have been constructed as development extended into the basin. The trunk sewer infrastructure is in place for future development of this area. The main trunk connection points for this basin are the following (see Figure 9.6 for a representation of the basin):

1. 15-inch trunk sewer located along NW 6th Street (Ash Drive) approximately 1/4 mile north of 36th Street. This sewer is intended to serve the southern part of the basin generally south of NW 118th Avenue.
2. 30-inch trunk sewer located along NW 118th Avenue near Four Mile Creek. This is the main trunk sewer for the basin and is intended to serve the far northwest and northern parts of the basin along Four Mile Creek.
3. 18-inch trunk sewer located on the south side of NW 118th Avenue approximately 1/4 mile west of Delaware Avenue. This trunk sewer is intended to serve a northern 1/4 mile section of the basin.
4. 15-inch trunk sewer located just north of NE 47th Street approximately 1/3 mile south of NW 118th Avenue and approximately 1/8 mile east of Delaware Avenue. This trunk sewer is intended to serve the eastern most 1/4 mile section of the basin along I-35.

In discussions with City staff and analysis of the proposed land uses, all the trunk sewers in this basin are sized adequately for future development in Ankeny's growth area. The only known downstream capacity constraint for this basin is the 24-inch trunk sewer that extends through the Briarwood Golf Course. This

constraint was discussed in a previous section of this document. All the wastewater flow generated from this basin will eventually drain to the WRA Four Mile Interceptor Trunk Sewer.

Sizes of future sewer segments shown on Figure 9.6 reflect what was shown on the study of the basin completed by Fox Engineering and the City including those areas outside of the current planning boundaries. Any increases in size are shown as necessary due to proposed land uses. The wastewater flows shown on Figure 9.6 reflect only flows determined from proposed land uses included in this plan and do not reflect additional flows outside of the current planning boundaries. It should be noted that sizes and flows of future sewer segments are preliminary in nature and will require detailed design prior to construction.

Northern Interceptor Basin – The Northern Interceptor basin will serve future development of an area generally bound north of 18th Street, west of State Street, south of NW 118th Avenue, and east of NW Irvindale Drive. The trunk sewer for this basin has been extended north from 18th Street to a termination point just north of 36th Street, approximately ½ mile west of State Street. The trunk sewer infrastructure is in place for future development of this area. Refer to Figure 9.7 for a representation of the basin. The Rock Creek lift station currently discharges to the Northern Interceptor. This flow from the Rock Creek lift station will be re-directed to the Rock Creek Trunk Sewer when the sewer is completed. This will provide additional capacity in the Northern Interceptor for development of this area.

Analysis of the basin indicated that all the pipe segments have full flow capacity handle the flow from the proposed land uses; however, a few pipe segments do not have the design capacity (2/3 or 3/4 full) to handle the flow from the proposed land uses. It is also recommended that the City conduct a capacity analysis of the Northern Interceptor downstream of the development area as development proceeds into the basin in the future.

Sizes of future sewer segments shown on Figure 9.7 reflect what was shown on the study of the basin completed by the City. Any increases in size are shown as necessary due to proposed land uses. The wastewater flows shown on Figure 9.7 reflect only flows determined from proposed land uses included in this plan and do not reflect additional flows outside of the current planning boundaries. It should be noted that sizes and flows of future sewer segments are preliminary in nature and will require detailed design prior to construction.

Otter Creek Basin - The Otter Creek basin will serve future development of an area generally bound by NE 38th Street to the east, NE 36th Street to the south, and I-35 to the west. Fox Engineering completed a preliminary design for trunk sewer in this basin in 2003. They recommended extending a trunk sewer from the Four Mile Interceptor sewer north to 36th Street. This sewer has since been completed and extended further into the basin to the east side of I-35. The trunk sewer infrastructure is in place for future development of this area. The main trunk connection point is a 24-inch trunk sewer located east of I-35 approximately 1/3 mile north of NE 36th Street. This sewer is intended to serve the majority of the Otter Creek Basin (see Figure 9.8 for a representation of the basin). In discussions with City staff, all the trunk sewers in this basin are sized adequately for future development in Ankeny's growth area with no known downstream capacity limitations. All the wastewater flow generated from this basin will eventually drain to the WRA Four Mile Interceptor Trunk Sewer.

Sizes of future sewer segments shown on Figure 9.8 reflect what was shown on the study of the basin completed by Fox Engineering and the City including those areas outside of the current planning boundaries. Any increases in size are shown as necessary due to proposed land uses. The wastewater flows shown on Figure 9.8 reflect only flows determined from proposed land uses included in this plan and do not reflect additional flows outside of the current planning boundaries. It should be noted that sizes and flows of future sewer segments are preliminary in nature and will require detailed design prior to construction.

Deer Creek Basin - The Deer Creek basin will serve future development of an area generally bound by I-35 to the west, E 1st Street to the south, and NE 36th Street to the north. The east boundary of the basin zigzags between NE 38th Street and NE 56th Street. The trunk sewer infrastructure is in place for future development of this area. The main 30-inch trunk sewer for this basin has been extended into the basin to a current termination point along Deer Creek approximately 2/3 mile east of I-35. The sewer is currently serving an existing development in the basin east of NE Frisk Drive. This 30-inch trunk sewer is intended to serve the majority of the basin (see Figure 9.9 for a representation of the basin). In discussions with City staff, all the trunk sewers in this basin are sized adequately for future development in Ankeny's growth area with no known downstream capacity limitations. All the wastewater flow generated from this basin will eventually drain to the WRA Four Mile Interceptor Trunk Sewer.

Sizes of future sewer segments shown on Figure 9.9 reflect what was shown on the study of the basin completed by the City including those areas outside of the current planning boundaries. Any increases in size are shown as necessary due to proposed land uses. The wastewater flows shown on Figure 9.9 reflect only flows determined from proposed land uses included in this plan and do not reflect additional flows outside of the current planning boundaries. It should be noted that sizes and flows of future sewer segments are preliminary in nature and will require detailed design prior to construction.

Oralabor Basin - The Oralabor Basin will serve future development of an area generally bound by Four Mile Creek to the

west, E 1st Street to the north, Oralabor Road to the south, and NE 38th Street to the east. The trunk sewer infrastructure is in place for future development of this area. The main trunk connection points for this basin are the following (see Figure 9.10 for a representation of the basin):

1. 24-inch trunk sewer located along the east side of Four Mile Creek approximately 3/4 mile north of Oralabor Road. This trunk sewer is intended to serve the majority of the north half of the basin.

2. 15-inch trunk sewer located along NE 20th Street approximately 1/4 mile east of SE Four Mile Drive. This trunk sewer is intended to serve the south central part of the basin. The remaining parts of the basin will be served with smaller sewers.

The outlet for the existing sewers in this basin is the Oralabor lift station. The City is planning discontinuing use of this lift station once the WRA Four Mile Interceptor Trunk Sewer is completed to this location. In discussions with City staff, all the trunk sewers in this basin are sized adequately for future development in Ankeny's growth area with no known downstream capacity limitations. All the wastewater flow generated from this basin will eventually drain to the WRA Four Mile Interceptor Trunk Sewer.

Sizes of future sewer segments shown on Figure 9.10 reflect what was shown on the study of the basin completed by the City with any increases in size as necessary due to proposed land uses. The wastewater flows shown on Figure 9.10 reflect only flows determined from proposed land uses included in this plan and do not reflect additional flows outside of the current planning boundaries. It should be noted that sizes and flows of future sewer segments are preliminary in nature and will require detailed design prior to construction.

Corporate Woods Basin - The Corporate Woods Basin will serve future development in southeast Ankeny. The area is bound by I-35 to the west, a 1/4 mile south of NE 54th Avenue on the south, a 1/4 mile east of NE 29th Street on the east, and generally zig-zagging around Corporate Woods Drive to the north. See Figure 9.11 for a representation of the basin. The trunk sewer infrastructure is in place for future development of this area. The trunk sewer serving the northern part of the basin is fully constructed to the northern fringe of the basin. The connection point for the 15-inch trunk sewer that will serve the south part of the basin is located along NE 29th Street approximately 1/4 mile north of NE 54th Street. All the wastewater flow generated from this basin will eventually drain to the WRA Four Mile Interceptor Trunk Sewer. In discussions with City staff, all the trunk sewers in this basin are sized adequately for future development in Ankeny's growth area with no known downstream capacity limitations. Sizes for future sewer segments shown on Figure 9.11 reflect what was shown in the study of the basin completed by the City.

Rock Creek Basin - The Rock Creek Basin will serve future development in the far west portions of Ankeny. The existing developed area in the basin is currently served by the Rock Creek lift station and force main. This lift station will go off-line when the Rock Creek Trunk Sewer is completed by 2010. At that point the entire basin will be served by the Rock Creek Trunk sewer. The trunk sewer will provide an outlet for gravity sewer service for the Golf View Acres area in the southern part of the basin. This area is currently served with on-site treatment systems.

The future development area is generally bound by NW 44th Street and the corporate limits on the west, the corporate limits on the south, NW Irvinedale Drive on the east, and NW 118th Avenue on the north. A portion of the existing collection system east of NW Irvinedale Drive is served by this basin. The trunk sewer infrastructure is in place for development of this area. The main connection point will be a 30-inch sewer located along Rock Creek approximately ¼ mile north of NW 5th Street (see Figure 9.12 for a representation of the basin). The Rock Creek Trunk Sewer (Segment 4) will be extended from this point to its ultimate termination point along NW 110th Avenue to serve Polk City by 2012. The trunk sewer infrastructure that will serve the Ankeny's Rock Creek Basin will branch off the Rock Creek Trunk Sewer. The trunk sewer will serve the remaining undeveloped portion of the basin. All wastewater flow from this basin will ultimately drain to the Rock Creek Trunk Sewer when the sewer is completed.

A preliminary layout of the sanitary sewer system is shown on Figure 9.12. A layout of the future sewers in the basin was completed by the City in 2006. Since that time, the Rock Creek Trunk Sewer has been proposed to be extended to the west side of Ankeny and an alignment has been chosen. The alignment of the Rock Creek Trunk Sewer created a need to adjust the sewer layout completed by the City in 2006. The layout shown in Figure 9.12 reflects changes to the layout based on the alignment of the Rock Creek Trunk Sewer. Sizes of future sewer segments shown on Figure 9.12 reflect a conservative approach based on the land uses of the basin in this plan. The sizes for sewers that will be extended past the boundaries of this plan are taken from the study completed by the City in 2006. Any increases in size are shown as necessary due to proposed land uses.

The wastewater flows shown on Figure 9.12 reflect only flows determined from proposed land uses and existing parcels inside the shaded boundaries of Figure 9.1, and do not reflect additional flows outside of the current planning boundaries. It should be noted that sizes and flows of future sewer segments are preliminary in nature and will require detailed design prior to construction. It is also recommended to perform a detailed study of the sewer layout for the Rock Creek Basin as the layout shown in this plan is only preliminary in nature.

The Rock Creek Sanitary Trunk Sewer Facility Plan completed in 2008 by Snyder & Associates included a capacity analysis for the Rock Creek Trunk Sewer. The effective capacity of the Saylor Creek Interceptor was indicated as 5.0 MGD on a peak flow basis (the Rock Creek trunk sewer drains to the Saylor Creek Interceptor). The report stated that anticipated flows from the Rock Creek Basin (including Ankeny, Polk County, and Polk City) would exceed this available capacity. The report developed a "Near Future" model of sanitary sewer flows projecting flows after the Rock Creek Trunk Sewer project is complete in 2012. The "near future" flows include flow from Ankeny's Rock Creek lift station, Polk City, Polk County, and areas of known development that will be served by the system by 2012. The model does not include flow from Ankeny's Saylor Creek Pump Station since this flow will continue to be pumped to the WRA Four Mile Interceptor Trunk Sewer.

The "near future" model for Ankeny included a peak hour wet weather (PHWW) flow of 2.58 MGD from the sewer directly south of the existing Rock Creek lift station (includes flow from Polk City), and a PHWW flow of 2.80 MGD from the Rock Creek Trunk Sewer outfall (includes flow from Polk City, undeveloped Golf View Acres area in Ankeny, and Polk County south of Ankeny). The "near future" model also indicated the Saylor Creek Interceptor had a PHWW flow of 5.39 MGD. The "near future" model indicated that PHWW flows would exceed the 5.0 MGD downstream capacity of the Saylor Creek Interceptor.

Conclusions from the "near future" modeling include the necessity to address peak flows generated in the Rock Creek basin as soon as or shortly after the Rock Creek Sewer is completed, and further development in the basin could not occur without addressing the downstream sewer capacity or mitigating the PHWW flows. By 2012 when the Rock Creek trunk sewer improvements are completed, the basin will be generating enough flow on a peak hour wet weather basis to be at the 5.0 MGD capacity of the downstream sewers in the WRA system.

The Rock Creek Sanitary Trunk Sewer Facility Plan also included modeling for the ultimate build-out of the Rock Creek basin and flows from Polk City in year 2058. The ultimate flows applicable to Ankeny are the following: a PHWW flow of 11.38 MGD from the sewer directly south of the existing Rock Creek lift station, a PHWW flow of 15.13 MGD from the Rock Creek Trunk Sewer outfall, and a PHWW flow of 19.87 MGD from the Saylor Creek WRA Interceptor. The resultant ultimate flows from the model showed that the downstream capacity restriction of 5.0 MGD is greatly exceeded by the peak and average flow rates with a fully built out service area. The Facility plan indicated that development in the basin would be restricted to a service area generating an average flow around 5.0 MGD due to the downstream capacity limitations.

To address the capacity limitations downstream of the Rock Creek Trunk Sewer, a flow equalization basin is recommended on the east side of the Des Moines River to mitigate flows from the Saylor Creek Interceptor. The basin could equalize flows during wet weather to an average wet weather (AWW) flow of 5.0 MGD. The equalization basin would provide an additional development area in the Rock Creek basin of 1,000 – 2,300 acres depending on land use. It is believed that most of the additional development area provided by the equalization basin would be allotted to Ankeny since Polk City will utilize their existing lagoons for flow equalization and significant development in the Polk County area is not expected in the near future.

Other Areas of Development

The Prairie Trail Development is located in central Ankeny generally bound by NW Irvinedale Drive on the west, the John Deere plant and Ordinance Road on the north, Ankeny Boulevard on the east, and Oralabor Road and the DMACC campus on the south. The area will be served by the West Outfall trunk sewer and subsequently the Saylor Creek Lift Station. The preliminary layout for future sanitary sewers in the development area were taken from the Prairie Trail Master Plan and shown on Figure 9.13. The capacity of the sewer system is dependent on the capacity of the Saylor Creek lift station. The flows to the lift station will continue to be monitored as development progresses in Prairie Trail. The Saylor Creek lift station and force main may need to be upsized in the future to serve the entire development. If the lift station and force main are upgraded, additional parallel capacity may be required in the Southern Interceptor to accommodate the additional flow.

IMPLEMENTATION RECOMMENDATIONS

WATER SYSTEM

The following action items are recommended based on the information presented in this chapter:

- Continue negotiating for source water capacity from the Des Moines Water Works (DMWW) as dictated by development in accordance with the recommendations of the Water System Facility Plan.
- Construct additional storage and ASR facilities as dictated by development in accordance with the recommendations of the Water System Facility Plan.
- Continue constructing water main loops with 12" mains on a one-mile grid with supplemental 10" mains on a half-mile grid as dictated by development.
- Construct improvements to the existing system outlined in the chapter when necessary or when determined economically feasible.
- Minimize connections between the two different pressure zones in the City.
- Construct a feeder main and possible booster station to supply water to the second pressure zone when required in the future in accordance with the recommendations of the Water System Facility Plan.

EXISTING COLLECTION SYSTEM

There are four main trunk sewers that currently serve the existing portions of the City.

- Northern Interceptor
- Four Mile Interceptor
- Southern Interceptor
- West Outfall

EXISTING SANITARY SEWER BASINS

The City of Ankeny has seven main sanitary sewer basins for future development.

- North Four Mile Basin
- Northern Interceptor Basin
- Otter Creek Basin
- Deer Creek Basin
- Oralabor Basin
- Corporate Woods Basin
- Rock Creek Basin

Table 9.3 shows improvements outlined in the City's 5 year Capital Improvement Plan with respect to the Water System.

SANITARY SEWER SYSTEM

The following action items are recommended based on the information presented in this chapter:

- Construct improvements to the existing system outlined in this chapter when necessary or when determined economically feasible.
- Provide sanitary sewer service to the Golf View Acres area when feasible after the Rock Creek Trunk Sewer Segments 1,2,&3 are completed.
- Perform an analysis for the major trunk sewers in the City to determine capacity downstream of the proposed development areas in this plan.
- Continue monitoring the West Outfall and Saylor Creek lift station as development progresses in Prairie Trail.
- Conduct a Sanitary Sewer Study for the Rock Creek Basin including more detailed layout of future trunk sewers. This study should also include investigation of how to serve the far western portions of the basin which can not be served by gravity sewer from the existing system.
- Extend trunk sewers into service basins as development progresses.

Table 9.4 shows improvements outlined in the City's 5 year Capital Improvement Plan with respect to the Water System.

Table 9.3 **Water System Improvements**

Year	Improvement	Cost
2010	Annual Water Main Extension/Replacement Program	$500,000
2010	South Ankeny Blvd. Feeder Main	$256,900
2011	Annual Water Main Extension/Replacement Program	$500,000
2012	Annual Water Main Extension/Replacement Program	$500,000
2013	Annual Water Main Extension/Replacement Program	$500,000
2014	Annual Water Main Extension/Replacement Program	$500,000

Table 9.4 Sanitary System Improvements

Year	Improvement	Cost
2010	Rock Creek Lateral Sewers	$ 6,345,000
2010	SE Area Sanitary Sewer Improvements	$ 900,000
2010	NE 54th Street Sanitary Sewer Extension	$ 245,000
2010	Annual Sanitary Sewer Repair/Replacement Program	$ 400,000
2011	West Trunk Sewer Extension – Prairie Trail	$ 120,000
2011	Annual Sanitary Sewer Repair/Replacement Program	$ 400,000
2011	SE Area Sanitary Sewer Improvements	$ 800,000
2011	NE Area Sanitary Sewer Improvements	$ 947,000
2012	Annual Sanitary Sewer Repair/Replacement Program	$ 400,000
2012	SE Area Sanitary Sewer Improvements	$ 800,000
2012	Otter Creek Trunk Sewer Phase 3	$ 1,374,000
2012	West Outfall Relief Sewer	$ 1,290,000
2013	Annual Sanitary Sewer Repair/Replacement Program	$ 400,000
2013	SE Area Sanitary Sewer Improvements	$ 100,000
2014	Annual Sanitary Sewer Repair/Replacement Program	$ 400,000
2014	Otter Creek Trunk Sewer Phase 4	$ 2,242,000

Figure 9.1: **Existing Water System**

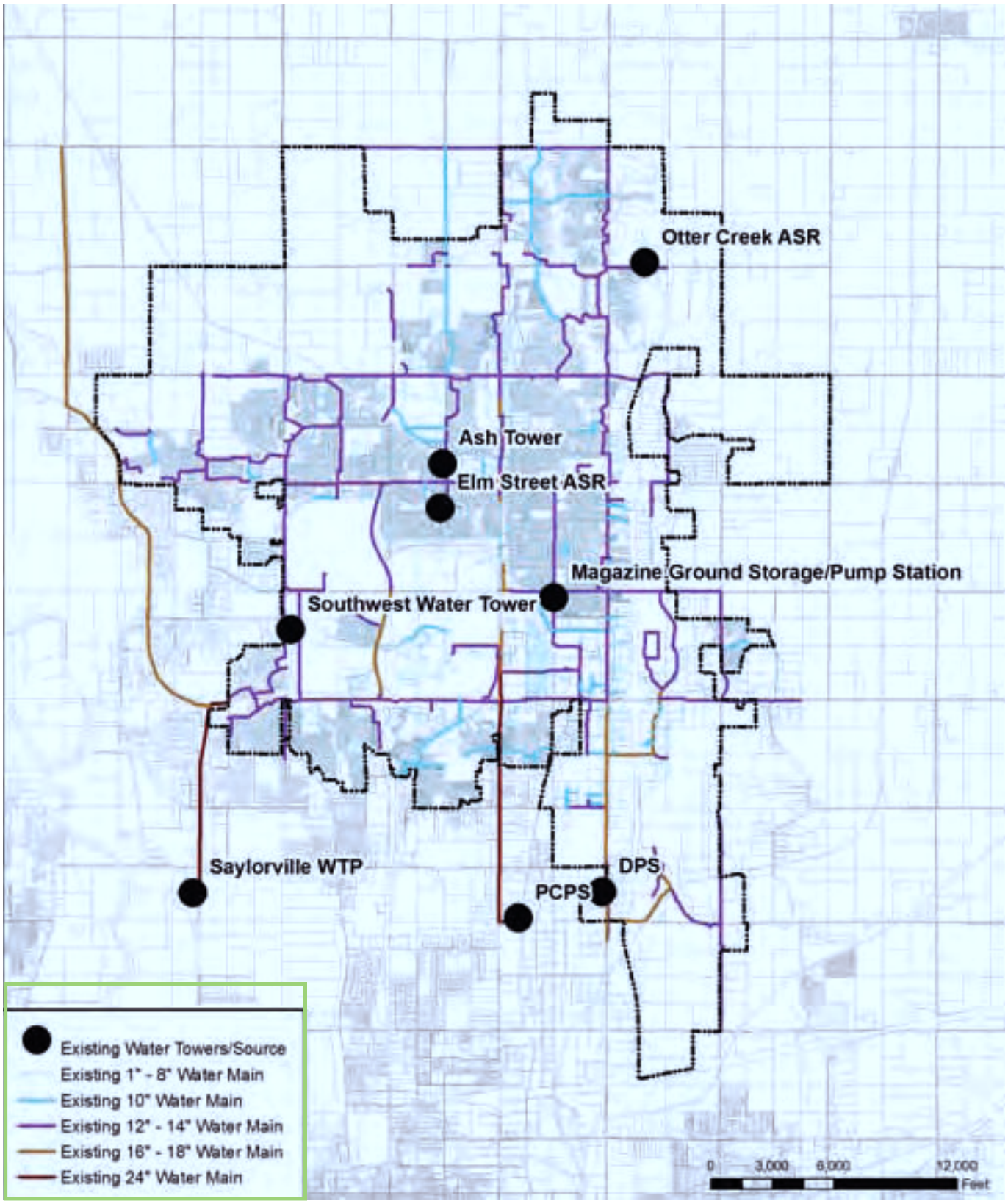


Figure 9.2: **Water System Pressure Zone Boundaries**

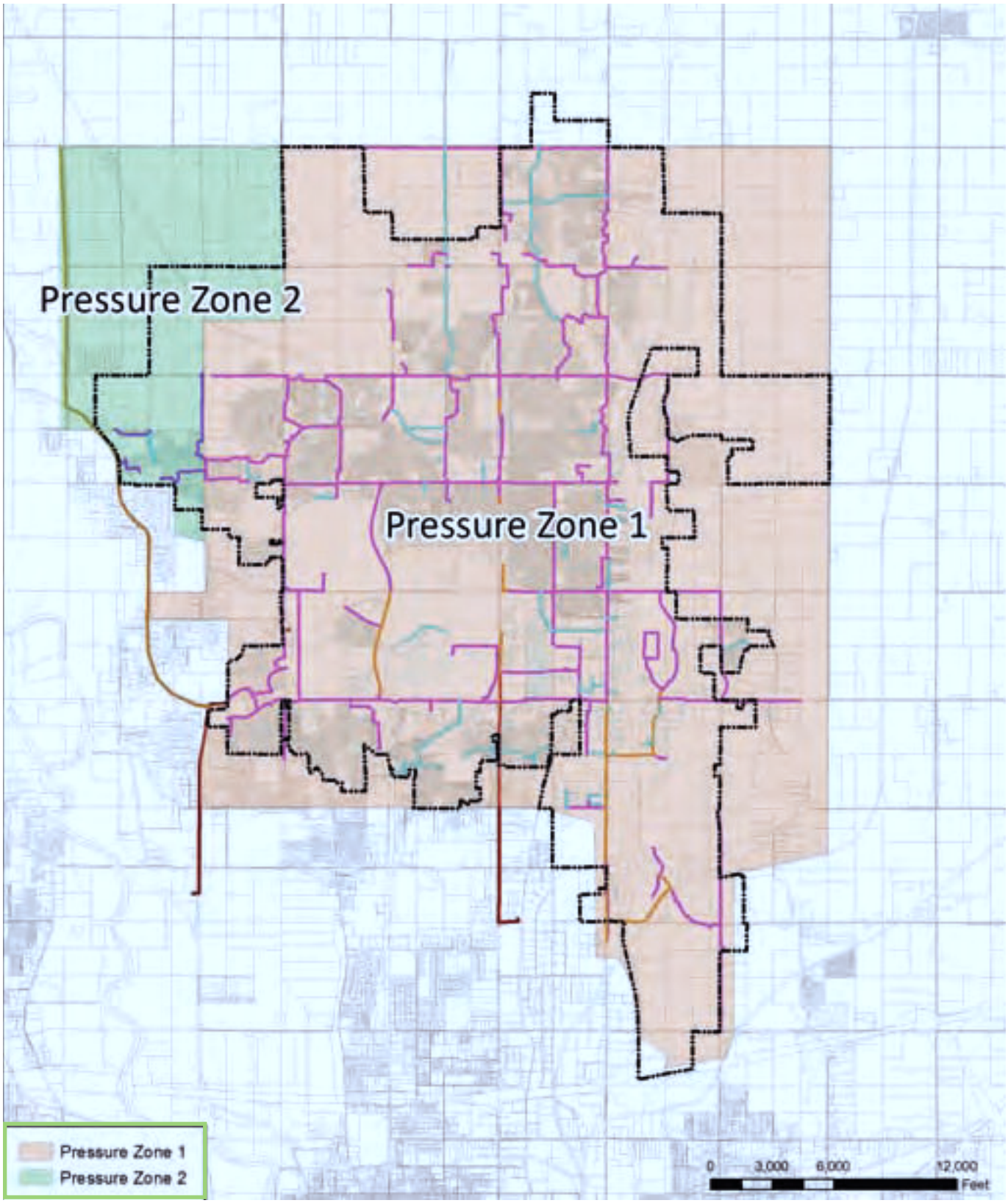


Figure 9.3: **Future Water System**

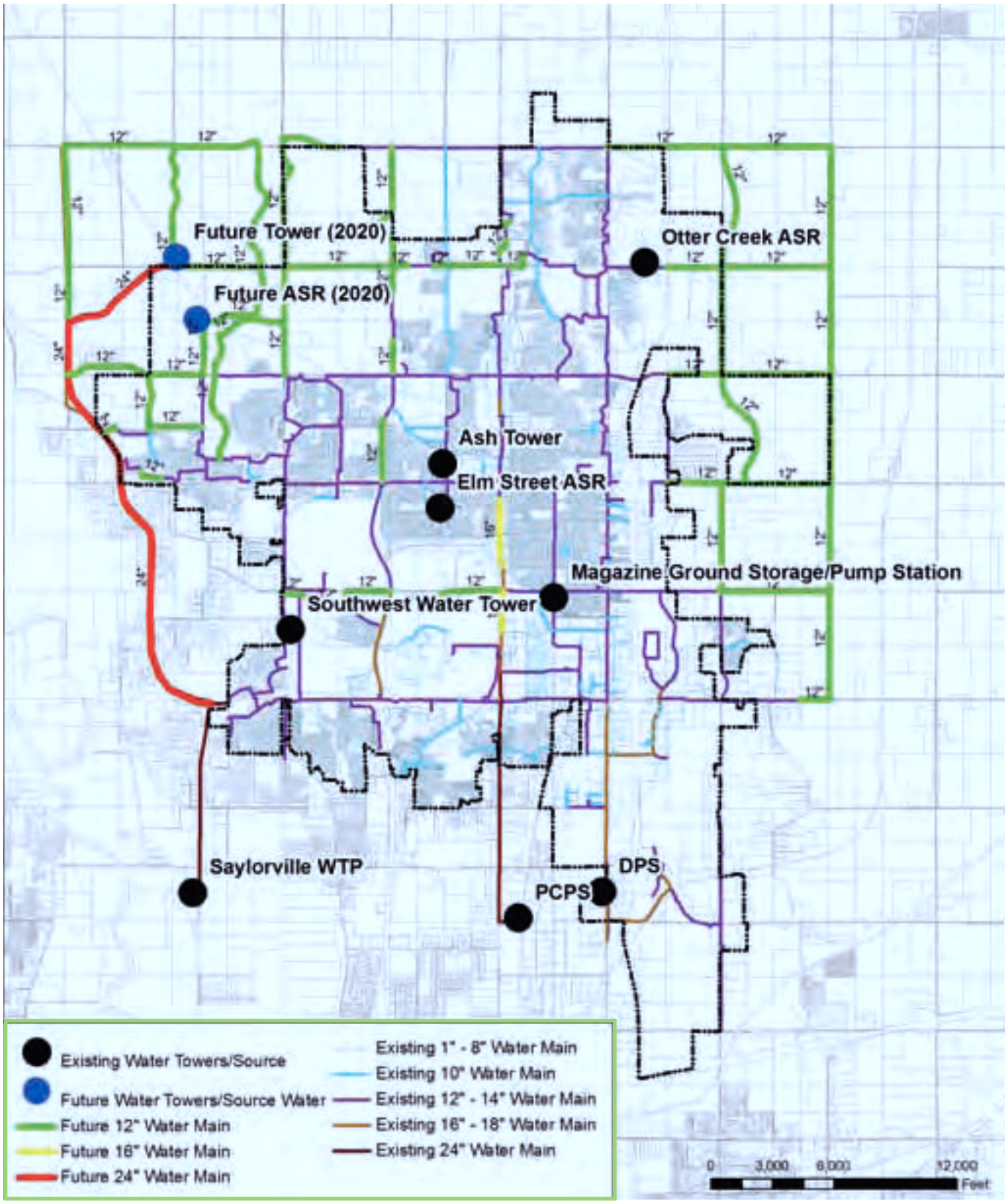


Figure 9.4: **Existing Sanitary Sewer System**

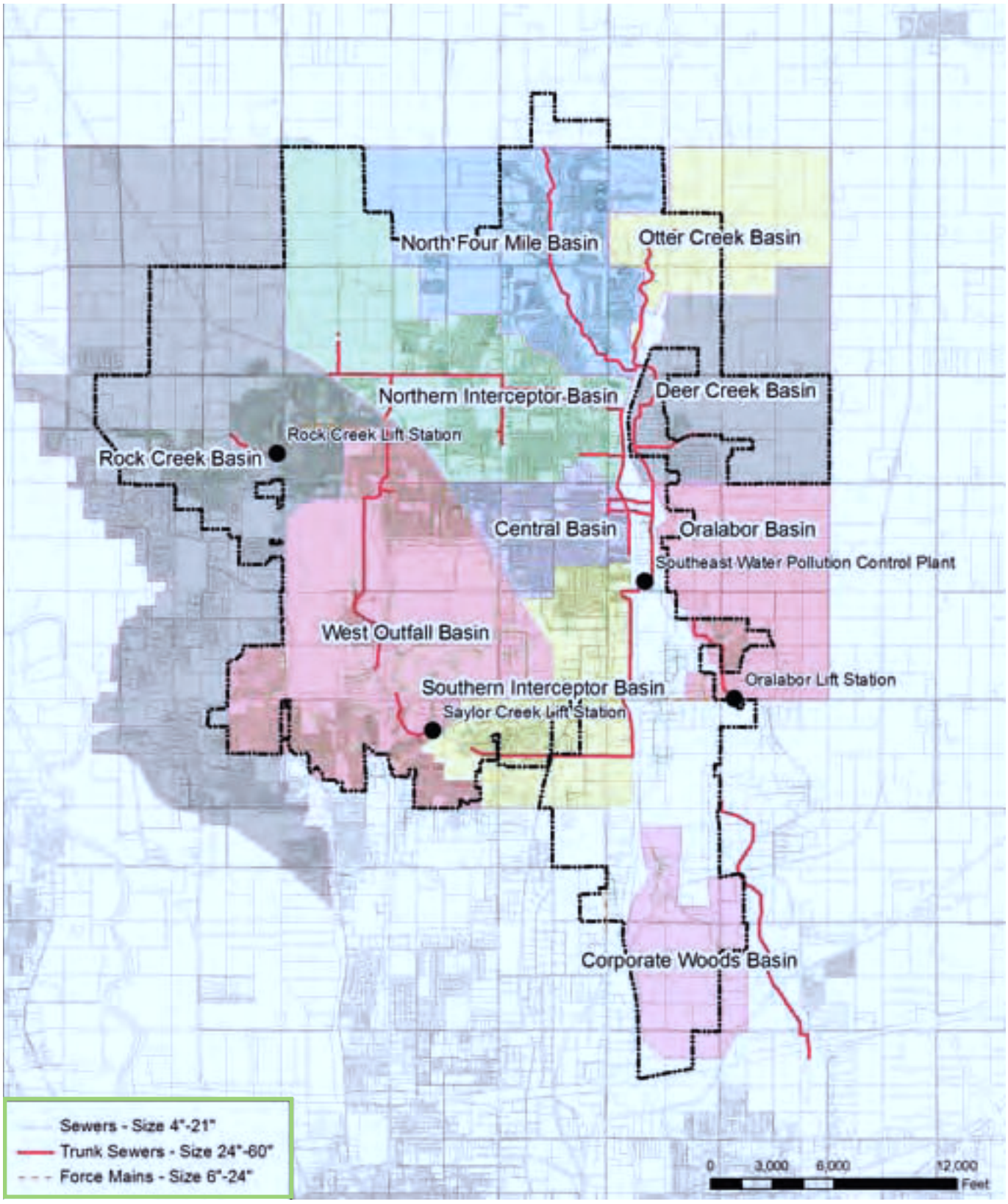


Figure 9.5: **Future Sanitary Sewer System**

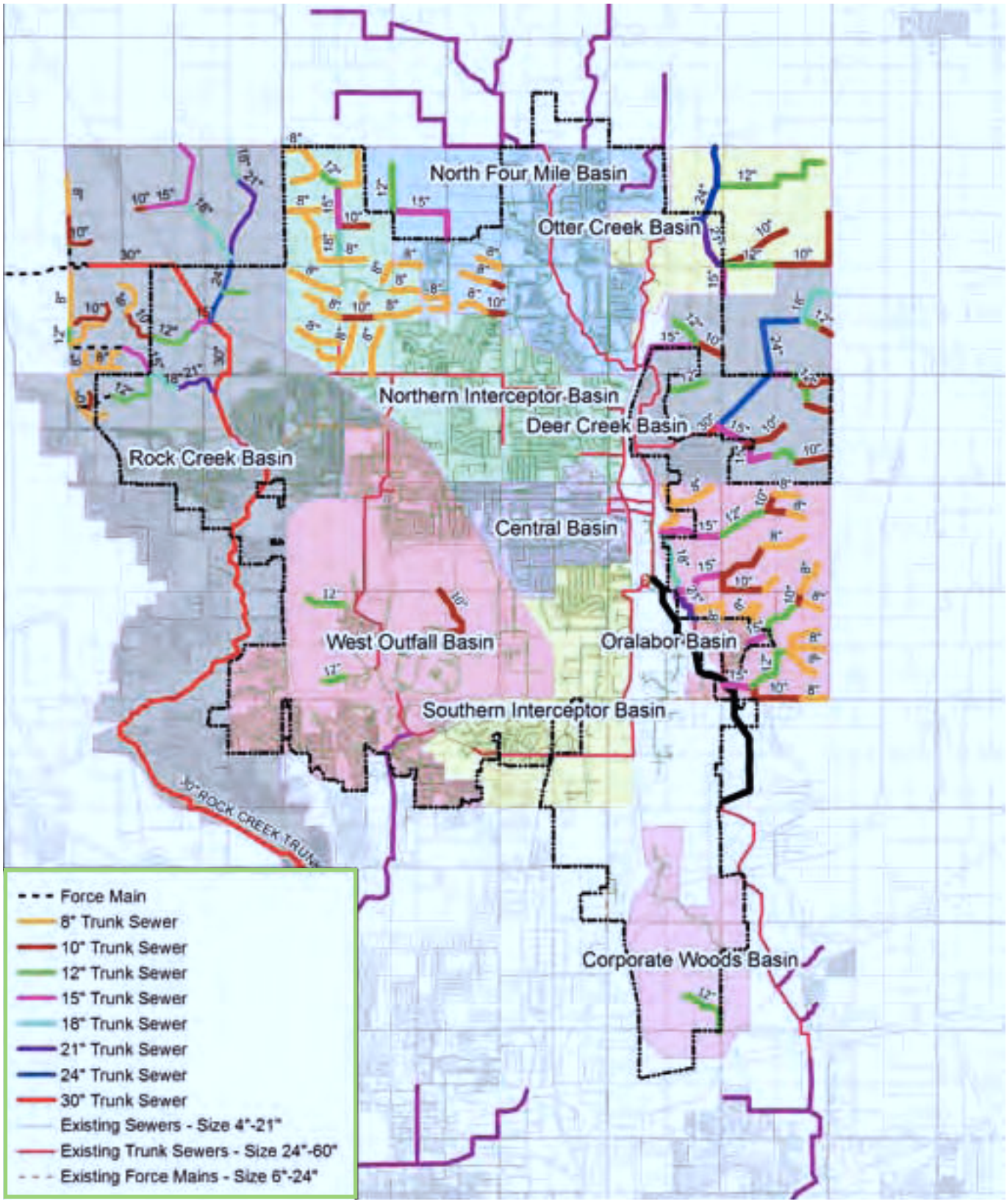


Figure 9.6: **North Four Mile Development Basin**

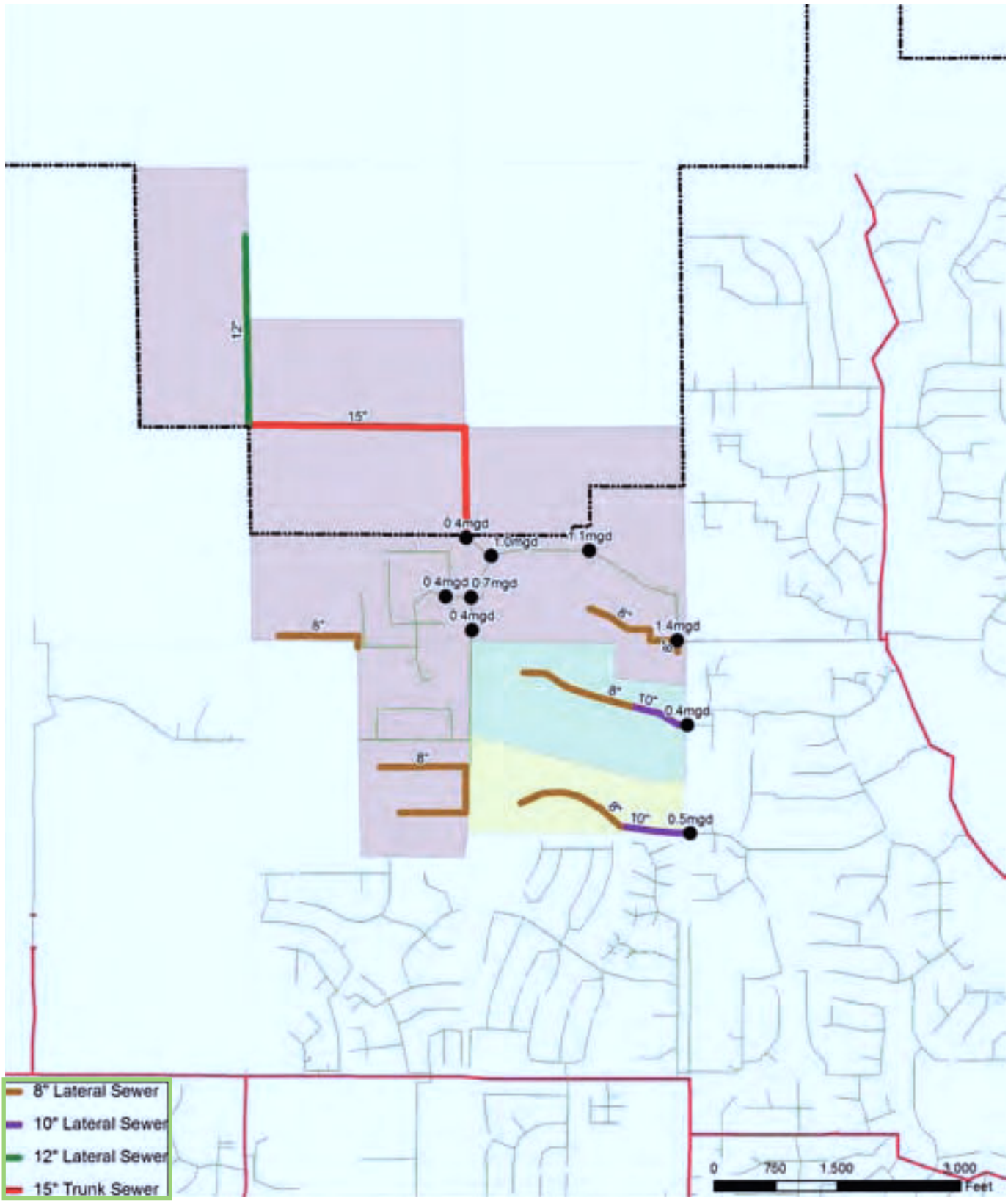


Figure 9.7: **Northern Interceptor Development Basin**

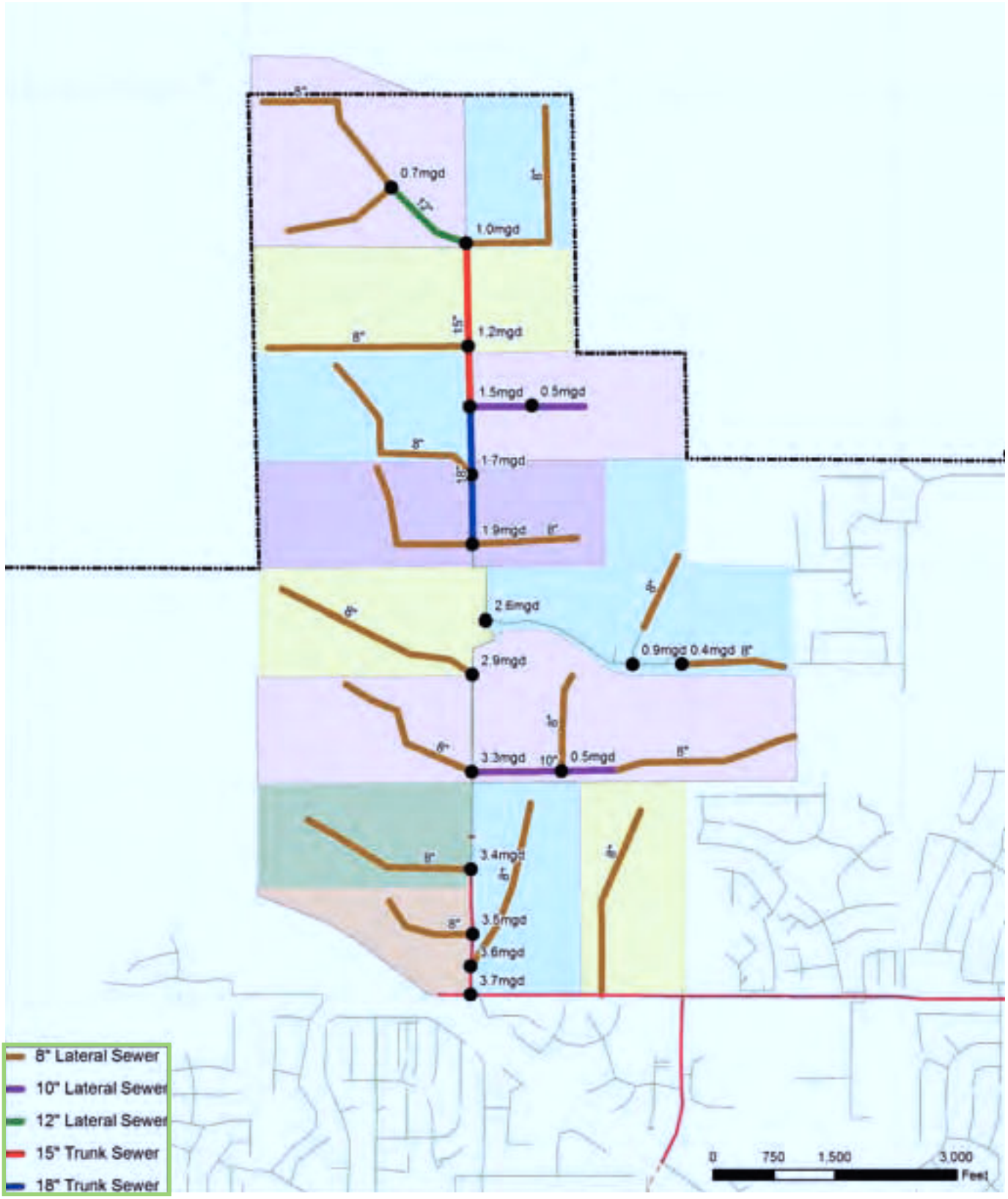


Figure 9.8: **Otter Creek Development Basin**

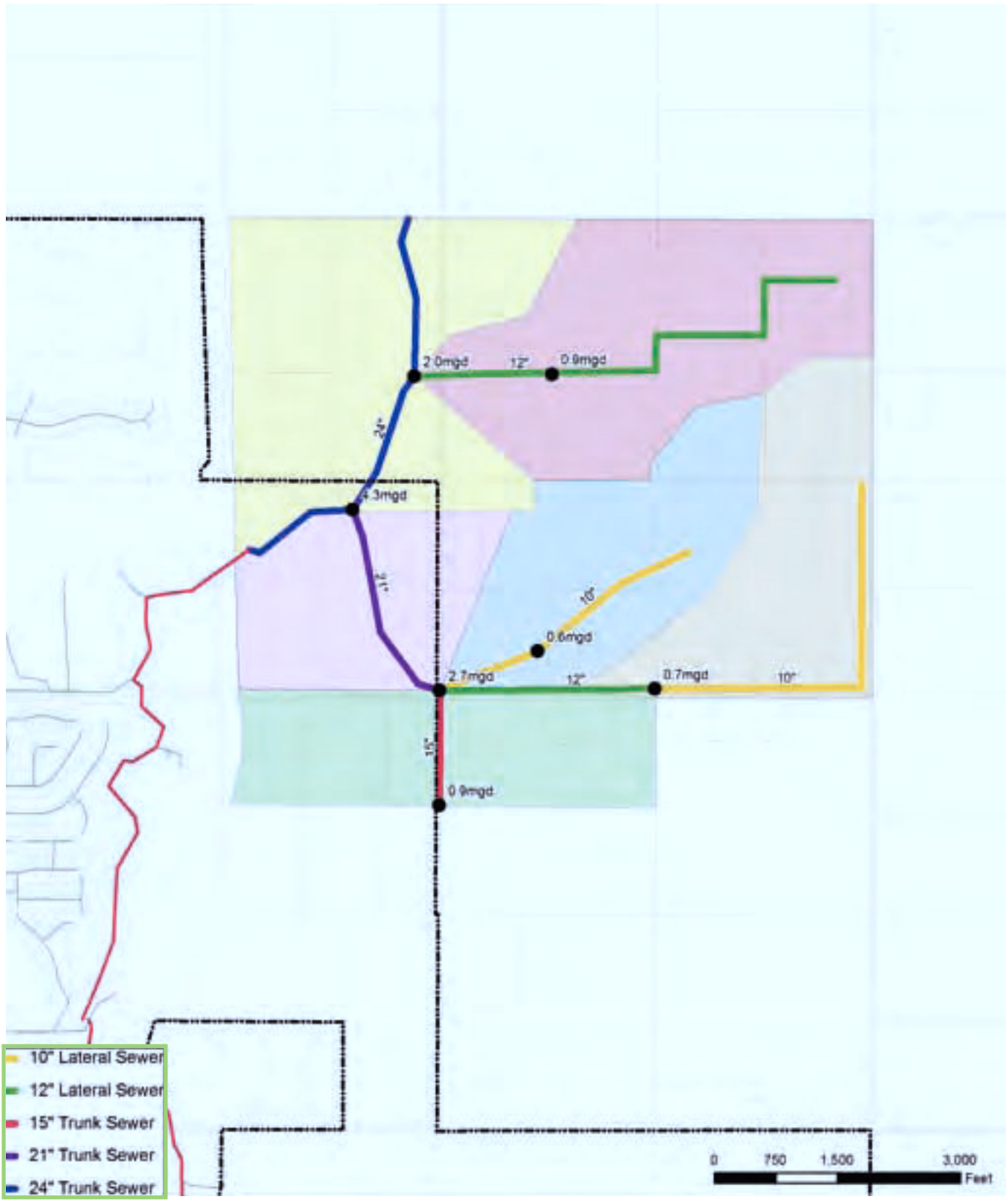


Figure 9.9: **Deer Creek Development Basin**

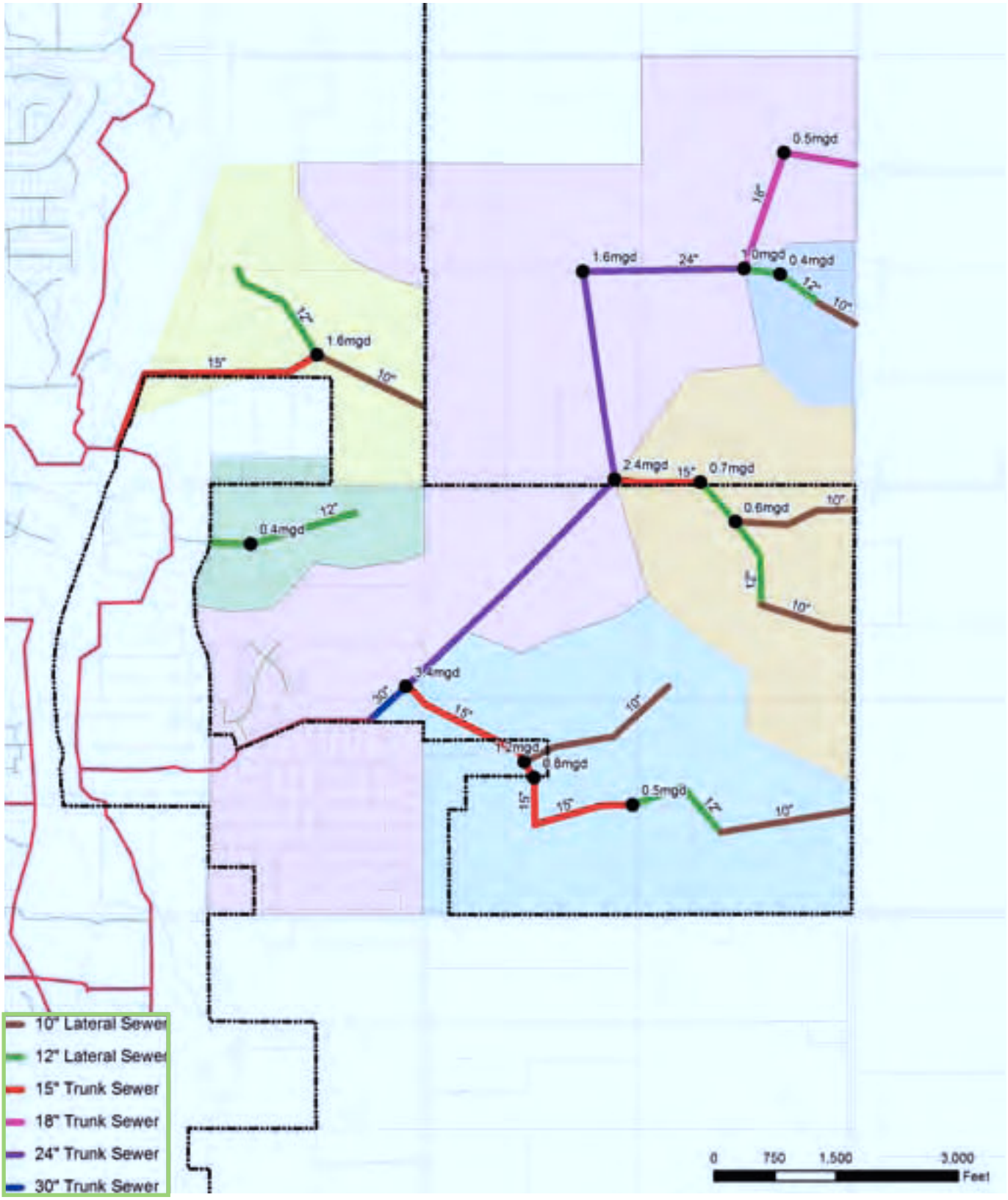


Figure 9.10: **Oralabor Development Basin**

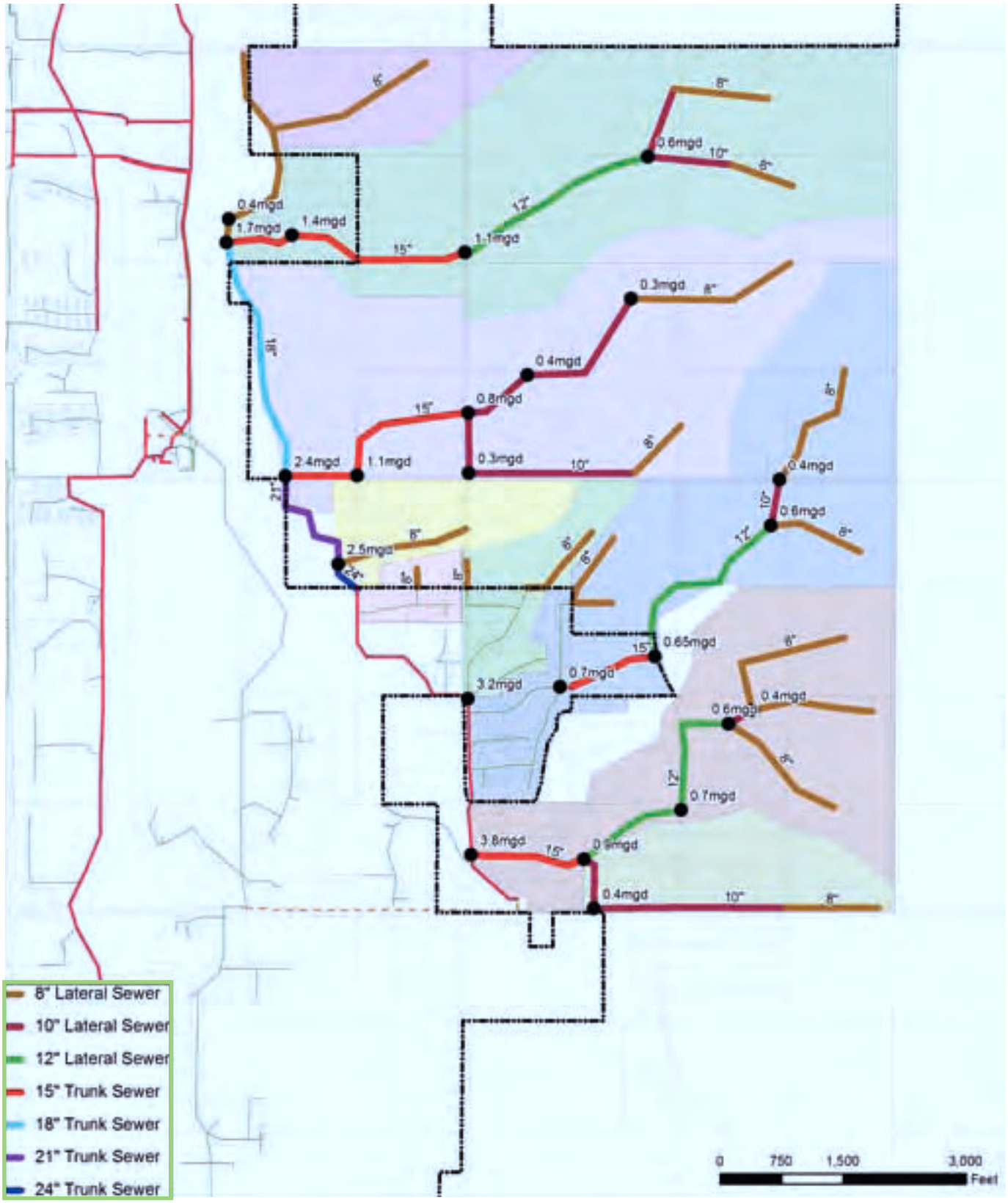


Figure 9.11: **Corporate Woods Development Basin**

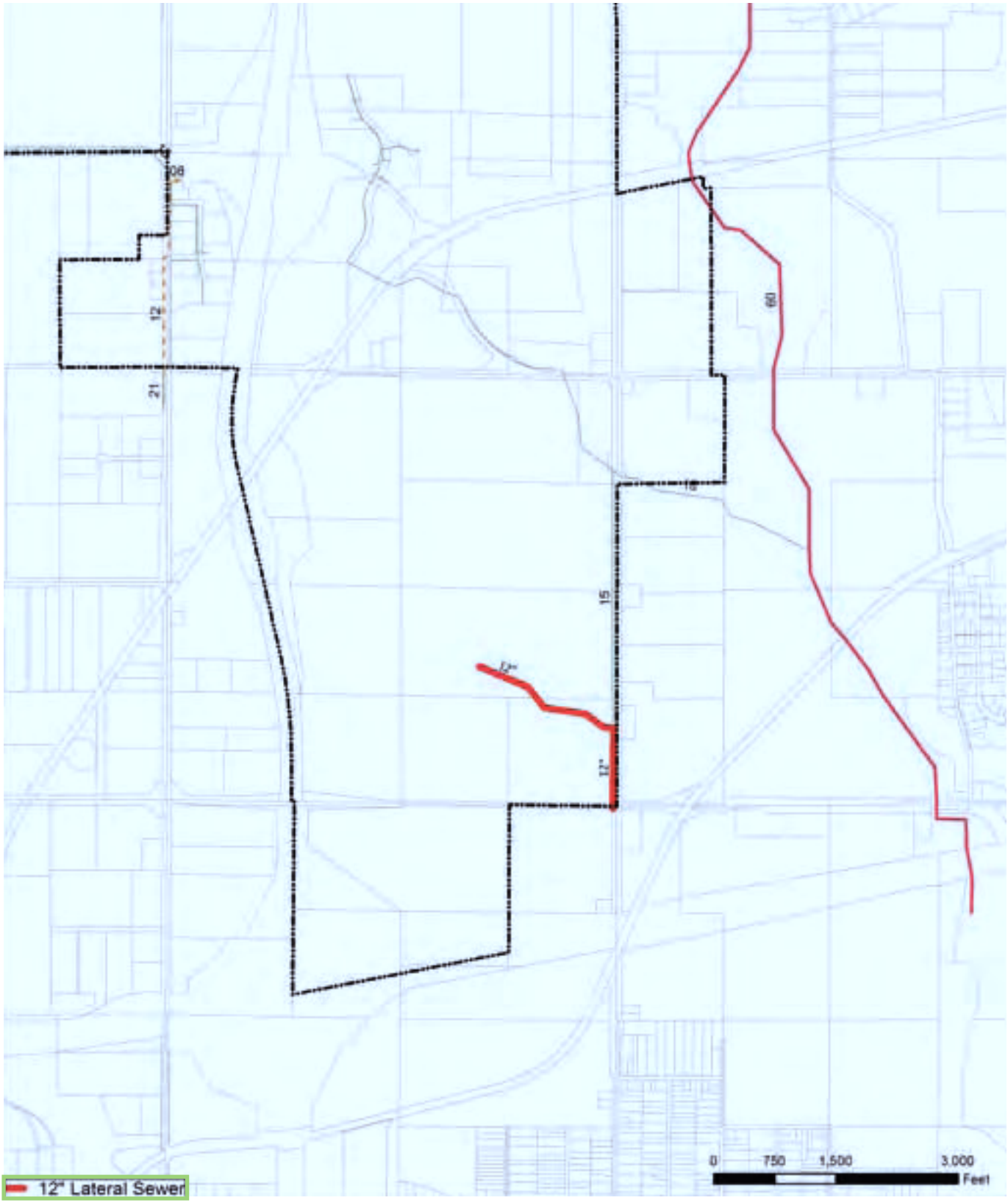


Figure 9.12: **Rock Creek Development Basin**

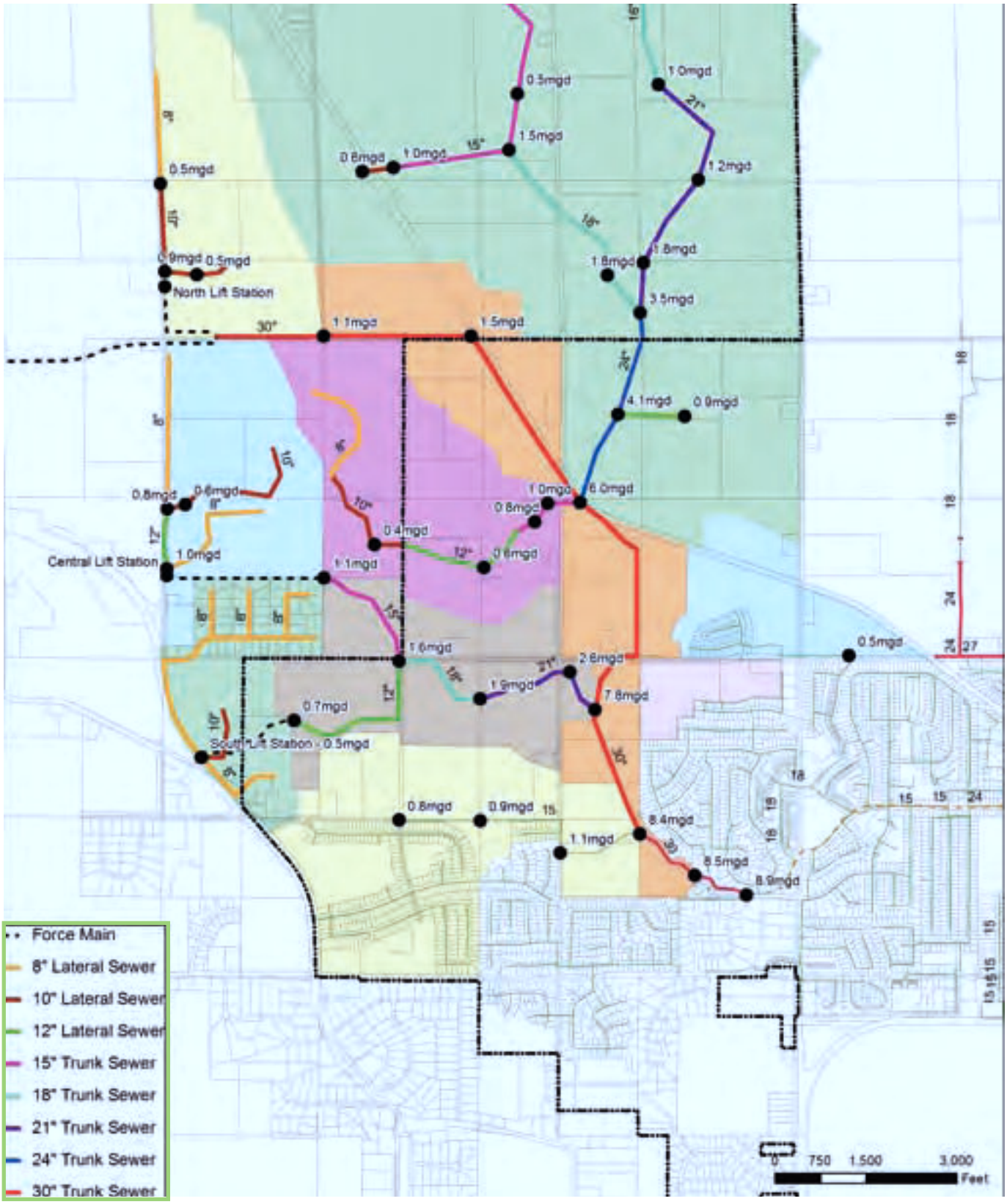
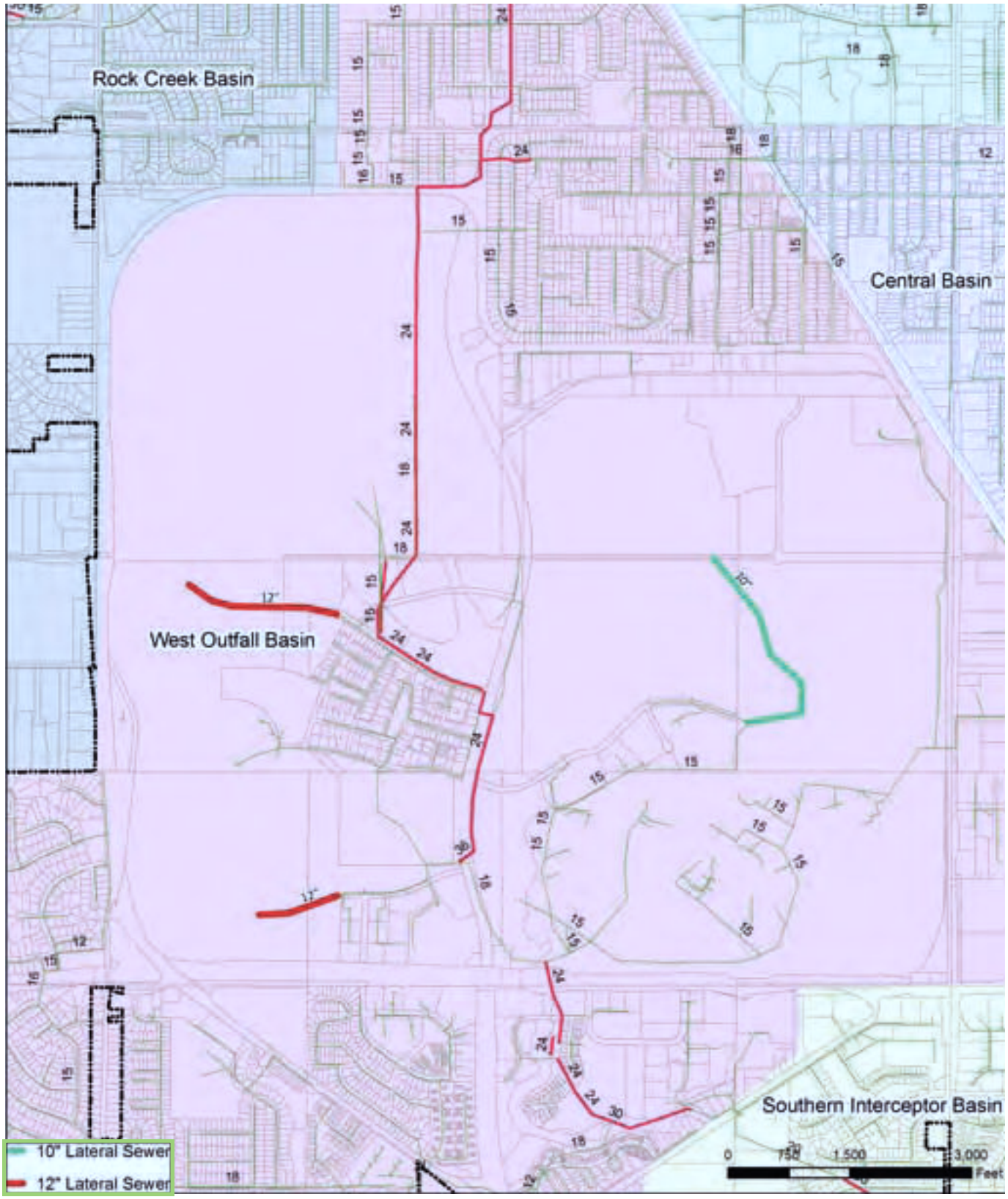
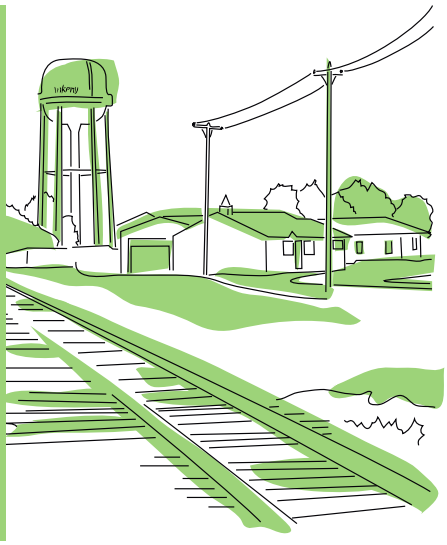


Figure 9.13: **Prairie Trail Development Area**



WATER AND SANITARY SYSTEM RECOMMENDATIONS

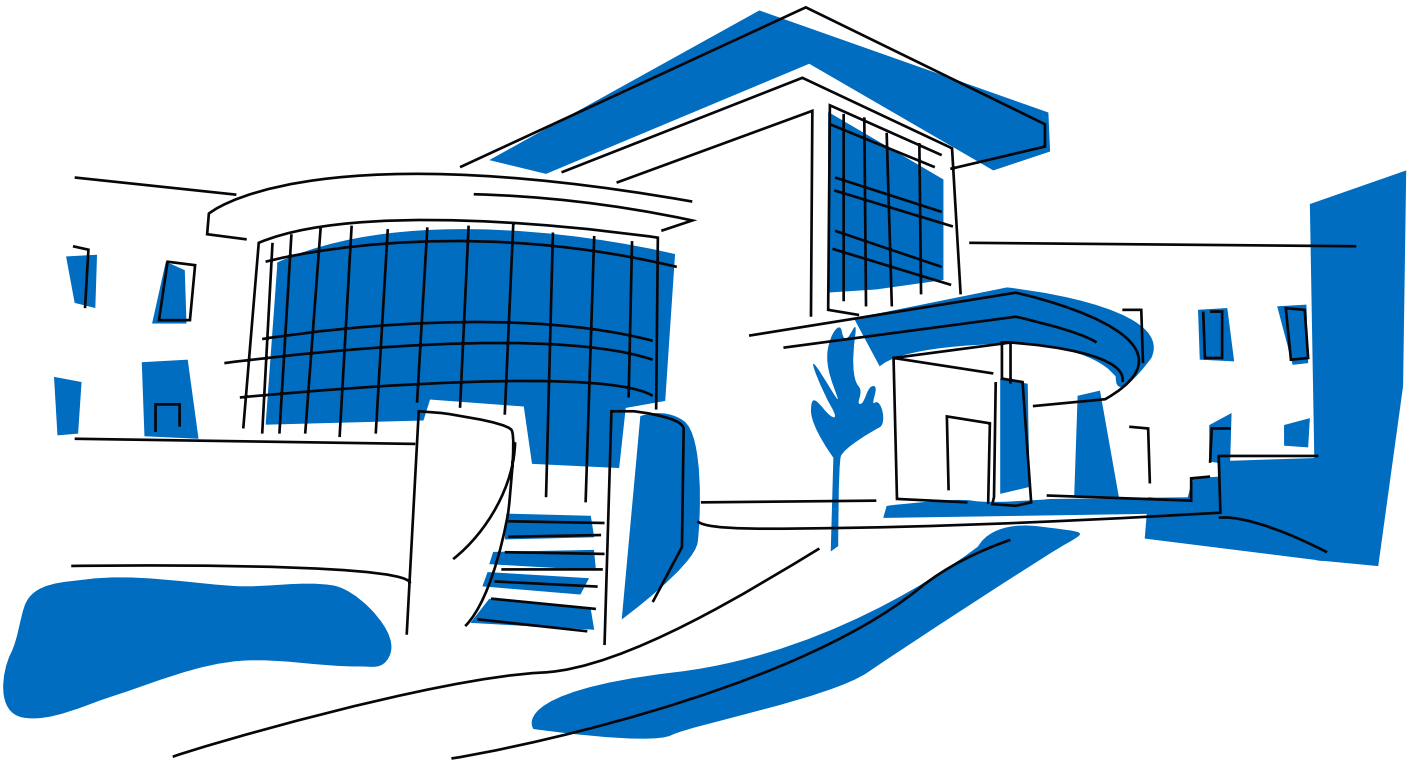
- Construct improvements to the existing water and sanitary sewer system.
- Conduct Sanitary Sewer Study for the Rock Creek Basin.
- Construct additional water storage and ASR facilities as development demands rise.
- Provide sanitary sewer service to the Golf View Acres area when feasible.
- Perform an anlysis for major trunk sewers in the City ti determine capacity downstream of the proposed development areas in this plan.
- Continue constructing water main loops with 12″ mains on a one-mile grid with supplemental 10″ mains on a half-mile grid as dictated by development.



9

PUBLIC FACILITIES

Ankeny's infrastructure systems are the framework for the City's basic operation and future growth. This chapter inventories existing public facilities and highlights the need for new facilities, or renovation and/or expansion of existing sites, to serve new and changing public service demands.



EXISTING PUBLIC FACILITIES

Public Facilities helps to ensure that Ankeny residents enjoy a safe and healthy environment.

Public Facilities in Ankeny include structures and sites to house such services and activities as following:

- law enforcement
- fire protection
- emergency medical services
- library
- infrastructure operations and maintenance,
- administration and general management of city business
- parks and recreation

INTRODUCTION

Public facilities play an important role in the efficiency of community services and contribute to the community's attractiveness, livability and image. Public facilities range from the obvious such as fire stations to facilities that are often taken for granted by the general public, such as space to store street maintenance materials. While one may seem more important, each helps to ensure that Ankeny residents and businesses enjoy a safe and healthy environment.

Public facilities in Ankeny include structures and sites to house such services and activities as law enforcement, fire protection and emergency medical services (EMS), library, infrastructure operations and maintenance, and the general management of City business. Parks and Recreation facilities are also considered public facilities, however, location and development of recreation sites is addressed separately in The Ankeny Parks and Facilities Comprehensive Plan and supplemented in Chapter 7 of The Ankeny Plan.

As growth continues to occur in Ankeny, facilities and services will need to be balanced with costs, but will remain instrumental in continuing to ensure a safe and healthy community. New, remodeled or expanded facilities may be needed to accommodate the demands of existing and new residents and businesses. These facilities typically are located where they best serve the needs of the particular system or user of the service. These facilities should be carefully planned and coordinated with neighborhoods or development; in some cases to enhance the development area and in some cases not to be detrimental to the development. At the same time, existing areas of the community, as in those identified in Chapter 5, should enjoy services that meet or exceed current standards.

The purpose of the Public Facilities Chapter is to ensure that as the community changes there is a basis of discussion regarding facilities that would ensure they are adequate to allow the city services to be provided effectively to existing and future residents and businesses of Ankeny. This element focuses on public facilities managed by the City.

This chapter inventories existing public facilities and highlights the need for new facilities, or renovation and/or expansion of existing sites, to serve new and changing public service demands. Goals and action statements depend, in part, on projected population growth, future land use plans, the municipal services that future leaders might choose to offer and other factors. In particular, the Future Land Use Plan reflects the desired growth pattern with the City and will influence the provision and location of future public facilities. Facility needs will also feed into implementation planning and multi-year capital improvements programming.

EXISTING PUBLIC FACILITIES

Below is an inventory of all City facilities. As mentioned previously, Parks are Recreation facilities are addressed separately in The Ankeny Parks and Facilities Comprehensive Plan and supplemented in Chapter 7 of The Ankeny Plan and include the two maintenance facilities, two rental facilities.

- City Hall, 410 W 1st Street
- Public Service Building, 220 W 1st Street
- Parks and Recreation Building, 210 S Ankeny Boulevard
- Police Headquarters, 411 SW Ordnance Road
- Old Police Headquarters, 211 SW Walnut Street
- Fire Station #1, 120 NW Ash Drive
- Fire Station #2, 665 SE Oralabor Road
- Old Fire Station, 716 SW 3rd Street
- Kirkendall Public Library, 1210 NW Prairie Ridge Drive
- Public Works Maintenance Facility and fueling station, 211 SE Lorenz Drive
- Public Works Storage Lot, South of Railroad Tracks on South Side of SW Ordnance Road
- Ankeny Art Center, 1520 SW Ordnance
- Water Pollution Control Facility, 1102 SE Creekview Drive
- Water Storage tanks and towers (addressed in the Infrastructure Chapter)

- Old Street, Water shops and office building, 700-800 block of SW Third
- Otter Creek Golf Course clubhouse and maintenance facility, NE 36th Street and NE Delaware Avenue

Administrative Buildings – City Hall, Parks and Recreation Building and Public Services Building

Currently the City Hall building, located at 410 W 1st Street, houses the City Manager and City Clerk's offices as well as the offices of the Information Technology, Human Resources, Finance and Public Relations Departments. The one-story structure was originally constructed as a library in 1975. The library occupied the building until 1996, when it relocated to the Kirkendall Public Library building. In 1997, the City renovated the building for administration services. The building, which covers 11,300 square feet, includes offices, storage areas, and the City Council Chambers.

The City Hall facility also contains a parking lot with 65 parking spaces. Overflow parking is provided at the adjacent Hawkeye Park to the north and the school property to the east. Parking is in short supply when events are happening simultaneously at these venues.

The Parks and Recreation Department is currently located in a leased building at 210 S Ankeny Boulevard. That 10,210 square foot building also contains offices of the Ankeny Chamber of Commerce. The site also contains 47 parking spaces in the adjoining parking lot.

The City currently leases the Public Services Building, located at 220 W 1st Street. This facility contains the Public Works, Municipal Utilities, Economic Development and Planning and Building Department personnel. The building is approximately 17,250 square feet and the site also contains 91 parking spaces.

Police

The Ankeny Police Department currently consists of 52 officers and 10.5 support staff. In 2009, the Ankeny Police Department moved into a new Police Headquarters located at 411 SW Ordnance Road.

The 75,600 square foot facility is the first police station in Ankeny built exclusively for the Department and is designed to accommodate 20 years of growth. It features advanced evidence storage and processing capabilities, a mini laboratory, an indoor firing range, a modern holding facility, indoor parking for police vehicles, and on-site training spaces.

All of these facilities will help the Department continue to deliver superior service to the Citizens of Ankeny for at least the next 20 years.

Fire

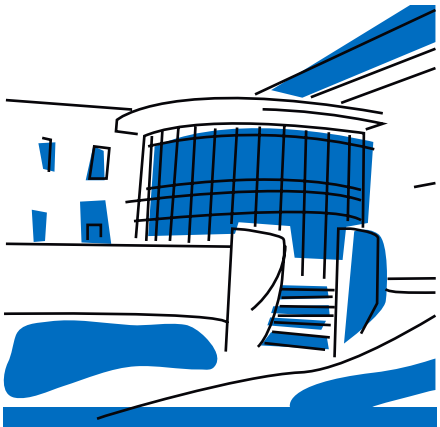
The Ankeny Fire Department currently consists of 15 full-time, 2.0 support staff and 55 paid-on-call staff. In 2008, renovation of Fire Station #1, located at 120 NW Ash Drive, was completed.

The renovations included a 15,000 square foot addition, for a new total of 31,000 square feet, which provided for new sleeping quarters for the 24/7 duty crew, a new emergency operations center (EOC), administrative offices, and a fire museum.

In 2009, the Ankeny Fire Department moved into Fire Station #2 located at 665 SE Oralabor Road. The 12,500 square foot building is currently staffed with one paramedic and one firefighter/medic and one ambulance. The facility includes sleeping quarters, a kitchen, office area and a three-bay, drive-through apparatus garage. These two facilities meet the Fire Departments facilities needs for the next several years based on current growth projections.

The City has land available in the northwest part of the City that could be used as a third fire station site. The City's Capital Improvements Program identifies a projected timeline for construction to be sometime after 2015.

a. Ankeny City Hall; b. Parks and Recreation Building; c. Ankeny Police Department; d. Fire Station #2;



EXISTING PUBLIC FACILITIES

- City Hall,
- Public Service Building,
- Parks and Recreation Building,
- Police Headquarters,
- Old Police Headquarters,
- Fire Station #1,
- Fire Station #2,
- Old Fire Station,
- Kirkendall Public Library,
- Public Works Maintenance Facility and fueling station,
- Public Works Storage Lot, South of Railroad Tracks on South Side of SW Ordnance Road
- Ankeny Art Center,
- Water Pollution Control Facility,
- Water Storage tanks and towers (addressed in the Infrastructure Chapter)
- Old Street, Water shops and office building,
- Otter Creek Golf Course clubhouse and maintenance facility,

Library

The Kirkendall Public Library, located at 1210 NW Prairie Ridge Drive, was constructed in 1996 and consists of 26,000 square feet and an 80 stall parking lot. The library contains a general collection, meeting rooms, children's area and office space. The library's collection consists of 93,604 volumes with an annual circulation of approximately 499,000 pieces. The library also provides a wide variety of services, including access to computers and the internet, reading programs, book groups, workshops, seminars, and continuing education classes. The library staff includes seven full-time and 20 part-time employees.

Public Works Maintenance Facility

In October of 2004, the public works and central garage operations moved into a newly constructed Public Works Maintenance Facility, at 211 SE Lorenz Drive. The Public Works Division consists of 19 full-time employees. The new 67,647 square foot facility is comprised of three buildings on an 11.3-acre site.

Building A, the main maintenance building is 30,887 square feet. The facility includes 7 drive through bays, 7 standard bays, a welding shop, parts, tools, diagnostic, mechanic work and hazardous materials rooms, bulk lubrication storage, sign fabrication shop, traffic signal maintenance shop, large wash bay, locker rooms, offices, and break/training facilities. Highlights of the central garage are the two 15,000-pound lifts and a 75,000-pound hydraulic lift. A 5-ton crane maneuvers throughout the facility.

Building B is a 27,000 square feet cold storage facility, which provides space for vehicles, equipment, and supplies. Building C provides 9,760 square feet of cold storage for 3,500 ton of rock salt, a salt brine mixing room, and outside storage containment for seven, 6,000-gallon tanks. A 7,500 sq. ft. area of Building B is used for certain Municipal Utilities Department shop space. In addition, a 3.4 acre site on SW Ordnance road is leased for storage by the Public Works Department.

Water Pollution Control Plant

The City of Ankeny is currently operating a 12 million gallon per day wastewater treatment plant. All wastewater from the City is currently routed to the plant for treatment and ultimate discharge to Four Mile Creek. The treatment plant consists of activated sludge treatment with ultraviolet disinfection. The plant also consists of a five million gallon flow equalization treatment basin.

The flow equalization basin detains wastewater during periods of high flow so the treatment plant is not overloaded. Once the flows drop to a normal level, the wastewater detained in the equalization basin is treated through the plant. This plant will be taken off-line in 2012

as the Wastewater Regional Authority completes a major trunk line from the Regional Treatment Facility along Four Mile Creek into Ankeny.

Ankeny Regional Airport*

The Ankeny Regional Airport, located east of Interstate 35 and south of Oralabor Road, covers approximately 530 acres and has been in operation since February of 1994. There airport has two runways, including: Runway 18/36, which is 5,500 feet long and 100 feet wide, and Runway 4/22, which is 4,200 feet long and 75 feet wide. However, due to restrictions on Runway 4/22, only 3,845 feet is currently usable for landings and take-offs. Runway 18/36 is setup for ILS/DME instrumentation approach. The airport handles an average of 118 airplanes per day. About half of those flights are attributable to local aviation traffic. Approximately 102 aircrafts are based on the field, include 82 single engine airplanes, 17 multiengine airplanes, one jet airplane, and 2 helicopters. The airport has one major service business, Exec 1 Aviation, which provides fuel, oxygen, parking, hangers, passenger terminal and lounge, flight school/training, aircraft rentals, sightseeing tours/rides, charters, aircraft maintenance, avionics service.

Otter Creek Golf Course/Pinnacle Club/Course Maintenance Facility

The Ankeny Otter Creek Golf Course is a municipal golf course. From the golfers perspective the course varies in length from 5,360 to 6,895 yards from the back tees with multiple sets of tees at each hole, and features a double-ended driving range and practice facility. Seventeen ponds coupled with the beautiful, well manicured, rolling fairways provide a wonderful 198.7 acres. The site contains two facilities the Pinnacle Club and a maintenance shop.

The Pinnacle Club was constructed in 2008 and is 11,364 square feet. It is a high quality facility consisting of meeting rooms (capable of a capacity up to 264 people), a catering kitchen, lounge and restaurant area, retail space and support rooms as well as an unfinished 4,545 sq. ft. lower level cart storage area. This facility serves the needs of the everyday golfer, business meetings, weddings along with a variety of other gatherings and uses. Otter Creek is also served by a small maintenance building located at 4405 NE Delaware Avenue. This is an approximately 2.0 acre site with a metal building of approximately 4800 sq. ft.

Other Community Buildings

The **Ankeny Arts Center**, located at 1520 SW Ordnance Road, directly east of the John Deere manufacturing plant, was originally constructed by the John Deere Credit Union in the 1970s. The City of Ankeny acquired the building from John Deere and renovated it as office space for the City's Community Development Department and Community Services administration.

In 2001, the Departments moved to a new location, leaving the building empty. In early 2002, the Arts Center moved into the building from the Neveln Community Center. The Ankeny Arts Center, a non-profit organization, leases the facility from the City of Ankeny.

The one-story structure is constructed of brick and masonry. The building has approximately 4,000 square feet of total space on the main floor and basement. The main floor includes office space, gallery, and a multipurpose room. The basement contains a large classroom, pottery room, sink room, and utility room. The parking lot is located on the north side of the building and contains 30 parking spaces. Main access to the first story is available on the north side of the building, handicap access is available on the east side of the building and access to the basement is available on the west side of the building.

A portion of the **Old Police Headquarters,** located at 211 SW Walnut Street, was con-

a. Ankeny Kirkendall Public Library; b. Public Works Maintenance Facility; c. Ankeny Regional Airport; d. Ottercreek Golf Course

*Ankeny is a partner with other governments in the Ankeny Regional Airport Authority

PUBLIC FACILITIES STANDARDS

- There are few national standards and fewer state standards guiding the planning of public facilities. There are no databases compiling standards adopted by local governments.
- There are few resources available to help identify appropriate LOS standards for providing public facilities and services. One resource that is available is the Planner's Estimating Guide by Arthur C. Nelson, FAICP. This resource is a compilation of national association LOS standards (where available) and national and regional survey results (where applicable).

structed in 1962 as City Hall. When Ankeny's City Hall functions were relocated in 1980, an addition was constructed on the facility, more than doubling its size to 11,300 square feet. Portions of the building were remodeled in 1980 and 1995. The one-story structure has a brick exterior and includes one garage bay. The facility has 44 parking spaces available in the adjacent parking lot. In 2009, the Police Department relocated into the new Police Headquarters. The facility is currently being leased to the Ankeny Community School District for use by their Information Technology Department.

NATIONAL PUBLIC FACILITY STANDARDS AND OBSERVATIONS FOR ANKENY

A major factor in the quality of community is the services offered by City government. The ability to provide those services that make Ankeny attractive to residents and businesses and the quality of those services are affected by the community's public facilities. The community's ability to balance the services and costs; and the facilities to house them is and will continue to be important to the future of the community.

Public services and the facilities to house them are perhaps the most difficult of all land uses to estimate. Each community has its own character and expresses its individual preferences for services and public facility quantity and quality through variable investments in buildings, land, personnel, and equipment. For example, one community may prefer parks over libraries, and its investment decisions will result in higher-than-average land area for parks, and lower-than-average capital and personnel investment in libraries. For some facilities, such as libraries, standards are recommended by national associations. While for other facilities, such as police and fire, there are no recommended national standards applicable to land-use planning per se.

Moreover, the nature of facility and land-use needs of different public facilities and services is affected differently by the same population and employment base. For example, police and fire services must be available on a 24-hour-per-day, seven-day-per-week basis, while library and administrative offices are geared to specific business hours, five to seven days per week.

As a result of all of these variables, it is difficult to identify a single level of service (LOS) standard for a given facility type or service that is applicable to all communities. There are few national standards and fewer state standards guiding the planning of public facilities. There are no databases compiling standards adopted by local governments. In short, there are few resources available to help us identify appropriate LOS standards for providing public facilities and services. One resource that is available is the Planner's Estimating Guide by Arthur C. Nelson, FAICP. This resource is a compilation of national association LOS standards (where available) and national and regional survey results (where applicable). Using this resource as well as other research, the following LOS standards have been identified and applicable observations for Ankeny have been included.

Administrative Offices

As communities grow, they generally must add administrative staff and acquire equipment to handle the additional workload. As a result, they need additionally office space to house new staff and equipment. Many city administration offices are crowded compared to their private sector counterparts. For instance, Urban Land Institute data shows a nationwide average of 347 square feet per employee of administrative office space. Furthermore, it is found that private sector office employees occupy an average of 305 – 374 square feet per employee of administrative office space, while public sector office employees are provided an average of 75 – 210 square feet per employee of administrative office space.

As stated previously, there are few national studies or reports which outline a LOS with regard to the provision of administrative office space for municipal governments. In 1991, Bainbridge Island, Washington performed a study of mid-sized communities and determined that 1,149 square feet per 1,000 population or 365 square feet per employee should be provided for administrative office space. Bainbridge Island's study also noted that this area included space for restrooms, hallways, and conference rooms. Their study also noted that because City Halls often include community centers in addition to housing administrative office functions, the need for public meeting facilities may increase the amount of administrative office space needed.

Currently, the City of Ankeny has approximately 38,760 square feet of administrative office space located in the City Hall, Public Services and Parks and Recreation buildings. Two of the three facilities are leased space. With 208 full time employees and an estimated 2009 resident population of 43,000 people, the City of Ankeny provides approximately 186 square feet of administrative office space per employee and approximately 901 square feet of office space per 1,000 residents. As can be seen, these totals are considerably below the recommendations of the Bainbridge Island study and Urban Land Institute data for national averages. The limited amount of existing administrative office space, meeting rooms and Council Chambers in the existing City Hall facility has been apparent for some time. Additionally, having the City's administrative offices located in three separate buildings is also inefficient, not only for City staff, but also for citizens and customers of the City. Consequently, plans are underway on the design of a new approximately 50,000 square foot City Hall that will be located in the Prairie Trail Development as part of a City Hall/Library Civic Complex. An exact timetable for the facilities construction has not been set. The new City Hall facility will provide not only the current needed administrative office space for City functions, but it will also provide room for growth over the next several years. Additionally, it will consolidate all of the appropriate City functions into one building, allowing for "one-stop shopping" for Ankeny residents and customers.

Library

Many communities use per capita standards to facilitate providing adequate library facilities and services to their citizens. This is a difficult analysis as the nature of library services creates space demands that may not allow for an equitable comparison. Below are some examples of those standards:

- Bothell Washington requires 0.29 – 0.4 square feet of library space per person.
- Carlsbad, California requires 0.8 square feet of library space per person.
- Boulder, Colorado requires 0.7 square feet of library space per 1,000 persons.
- Chula Vista, California requires 500 square feet of library space per 1,000 persons.
- Des Moines, Washington has adopted guidelines of 0.39 square feet of library space and 2.42 volumes per person.

Additionally, according to a study performed by the Joseph L. Wheeler and Herbert Goldhor in 1981 (Fact Book of the American Public Library), communities with a population of 35,000 – 100,000 should provide 0.50 – 0.60 square feet of library space per person. Given the current library space and number of volumes, the Kirkendall Public Library currently provides approximately 0.60 square feet of library space and approximately 2.18 volumes per person to the community.

The demand for services and the growth of the community continue to expand the need for library services. The current 26,000 square foot Kirkendall Public Library has outgrown its current space primarily due to demand for computer/internet access and children's programs. A 2008 study performed by Aaron Cohen & Associates found that investing in the existing facility given its size, programming and technology limitations would not be a good investment of City resources. Instead, the recommendation of the study is construction of a new 50,000 square foot library building, supplemented in the future with branch library facilities. Subsequently, plans are underway to construct a new facility that will be located in the Prairie Trail Development as part of a City Hall/Library Civic Complex.

Police

As stated previously, there are no adopted national LOS standards identified for police facilities. Based on the research available, the most common method of determining a LOS standard for police facilities is a calculation of sworn officers per 1,000 residents. In 2003, the International City/County Management Association (ICMA) prepared a report that summarized the

a. Ankeny City Hall; b. Ankeny Kirkendall Public Library; c. Ankeny Police Department; d. Ankeny Regional Airport;

results of a variety of studies and national surveys and found that for communities with a population of 25,000 – 49,999, the number of sworn police officers per 1,000 residents was 1.86 and for communities with a population of 50,000 – 99,999 the number of sworn police officers per 1,000 residents was 1.75.

The City of Ankeny Police Department has a goal of reaching 1.58 sworn officers per 1,000 residents. While, slightly less than the averages identified in the ICMA report, this goal is generally consistent with the national surveys. In 2007, the City began the implementation of a five year staffing plan to achieve that goal. Currently, with an estimated 2010 population of 43,000 people and 52 sworn police officers, Ankeny has approximately 1.21 officers per 1,000 residents.

Additionally, the newly constructed 75,600 square foot Police Headquarters facility is the first police station in Ankeny built exclusively for the Department and is designed to accommodate 20 years of growth. It features advanced evidence storage and processing capabilities, a mini laboratory, an indoor firing range, a modern holding facility, indoor parking for police vehicles, and on-site training spaces. All of these facilities will help the Department continue to deliver superior service to the Citizens of Ankeny for at least the next 20 years. Therefore, additional Police Department facilities are anticipated during the life of the current comprehensive plan.

Fire

Again, as stated previously, there are no adopted national LOS standards identified for fire facilities. Based on the research available, the most common method of determining a LOS standard for fire facilities is a calculation of Fire/EMS personnel per 1,000 residents. The 2003 ICMA report found that for communities with a population of 25,000 – 49,999, the number of Fire/EMS personnel per 1,000 residents was 1.53 and for communities with a population of 50,000 – 99,999 the number of Fire/EMS personnel per 1,000 residents was 1.35.

Currently the Ankeny Fire Department has 70 Fire/EMS personnel. With an estimated 2010 population of 43,000 that equates to approximately 1.63 Fire/EMS personnel per 1,000 residents. This is slightly above the 1.53 personnel identified in the ICMA report for a community of this size.

Another common method for determining or benchmarking fire department performance is response time. However, as with all other LOS measures, the methods for calculating and evaluating response time vary by community. For instance, the City of Ames, Iowa has a goal to provide a five minute response time to 85% of the land area of the City; the City of Kirkland, Washington has a goal of a five minute response time to 70% of the City's population; and the City of Olympia, Washington has a goal of a six and a half minute response time to 95% of the City's population. The City of Ankeny has set a performance standard of responding to all Fire/EMS calls within eight minutes, 80 percent of the time.

The two current fire station facilities meet the Fire Department's needs for the next several years based on current growth projections. The City has land available for a third fire station in the northwest part of the community, with the City's Capital Improvements Program identifying a projected timeline for construction to be sometime after 2015.

Public Works Maintenance/ Storage

Miscellaneous facilities usually include land-extensive activities such as storage yards, shops with large repair areas, and equipment and material storage yards among others. Once again, there are no national LOS standards for providing these types of public facilities. Research has found that these facilities typically have no relationship between population and the amount of facility space and land area needed to conduct these activities.

As mentioned previously, a new Public Works maintenance facility was opened in 2004. The new 67,647 square foot facility is comprised of three buildings on an 11.3-acre site. The facility is sized to provide adequate space and service to the community for the short-term future; however, as the community grows and as other facilities such as the old maintenance shop, fire station and land are disposed of, the City will need to analyze it's needs for additional building space for storage and operations in Public Works and Municipal Utilities.

Water Pollution Control Facility

The City of Ankeny made the decision to connect to the Des Moines Metropolitan Wastewater Reclamation Authority (WRA) in 2003. This decision will ultimately result in discontinuing use of the current wastewater treatment plant. Discontinuing use of the plant is contingent on the completion of the WRA Four Mile Interceptor Sewer. The WRA Four Mile Interceptor Sewer is a 60-inch diameter sanitary sewer that extends from the Des Moines Wastewater Reclamation Facility to the treatment plant in Ankeny. The sewer is currently completed to a point approximately 1 mile south of Oralabor Road and is scheduled for completion to the Ankeny treatment plant by 2012.

Once the WRA Four Mile Interceptor Sewer is constructed, the City will discharge all of its wastewater flows to this sewer and ultimately to the Des Moines Wastewater Reclamation Facility. The Ankeny treatment plant will be abandoned. However, the WRA will continue to operate and maintain the flow equalization basin at the treatment plan site.

Ankeny Regional Airport

The Ankeny Regional Airport is in good condition with excellent accessibility to the facility. The community has made a major investment in this facility and continues to benefit with the private and business use of the facility being an attractive addition to the amenities offered for economic development. The layout of the airport is consistent to the guidelines set by the Federal Aviation Administration (FAA). Generally speaking, the amount of aircraft storage is limited and additionally storage space is needed. Furthermore, additional runway space is needed to accommodate larger aircraft. There is a plan in place to lengthen Runway 4/22 by 2012. The runway improvement will require the realignment of NE 29th Street/ SE Four Mile Drive and acquiring additional runway protection area, which is scheduled to begin in 2010.

It should be noted that although airport noise is not a significant issue at present, future development and land uses should be planned surrounding the airport that are tolerant of airport noise in the future.

SUMMARY

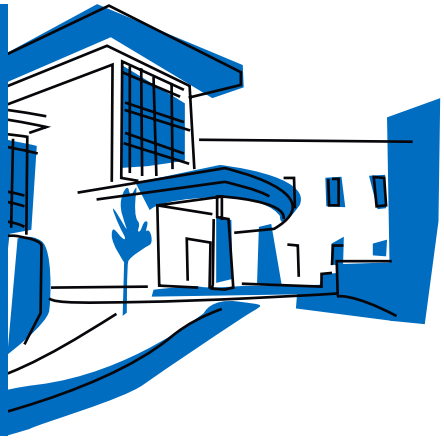
The City of Ankeny places a high priority on the provision of excellent customer service to its businesses and residents. A component of this effort is the construction and maintenance of adequate public facilities. Generally speaking, the City of Ankeny has done a good job of planning and providing for public facilities. Many public facilities and services have been upgraded in the past few years, including the Police Headquarters, Fire Stations #1 and #2, and the Public Works Maintenance Facility. The construction or improvements of these facilities will serve the community for several years to come. Additionally, plans for the expansion or improvement of other facilities, including a new City Hall, Library, and airport runway expansion, are already underway.

As the community continues to grow, it is important that the City identifies methods for benchmarking public facilities and services so that proper planning can be undertaken to provide public facilities and services to maintain the high level of customer service expected by the residents and businesses of Ankeny. While this plan makes no specific recommendations regarding facilities; it seems that the next study effort should be in the areas of facility support for maintenance and operations in Public Works, Municipal Utilities and Parks.

The Plan is proposing to continue to work toward benchmarking and monitoring these facilities which will provide needed data that can be utilized for the next update of the plan in five to 10 years.

CONCLUSION

- Many public facilities and services have been upgraded in the past few years including police headquarters, fire stations and public works maintenance facility. Plans for .
- Ankeny should continue construction and maintenance of adequate public facilities.
- Plans for the expansion or improvement of other facilities, including city hall, library and airport runway expansion, are already underway.
- City should identify a method for benchmarking public facilities and services as community grows so that high level of public services can be maintained.



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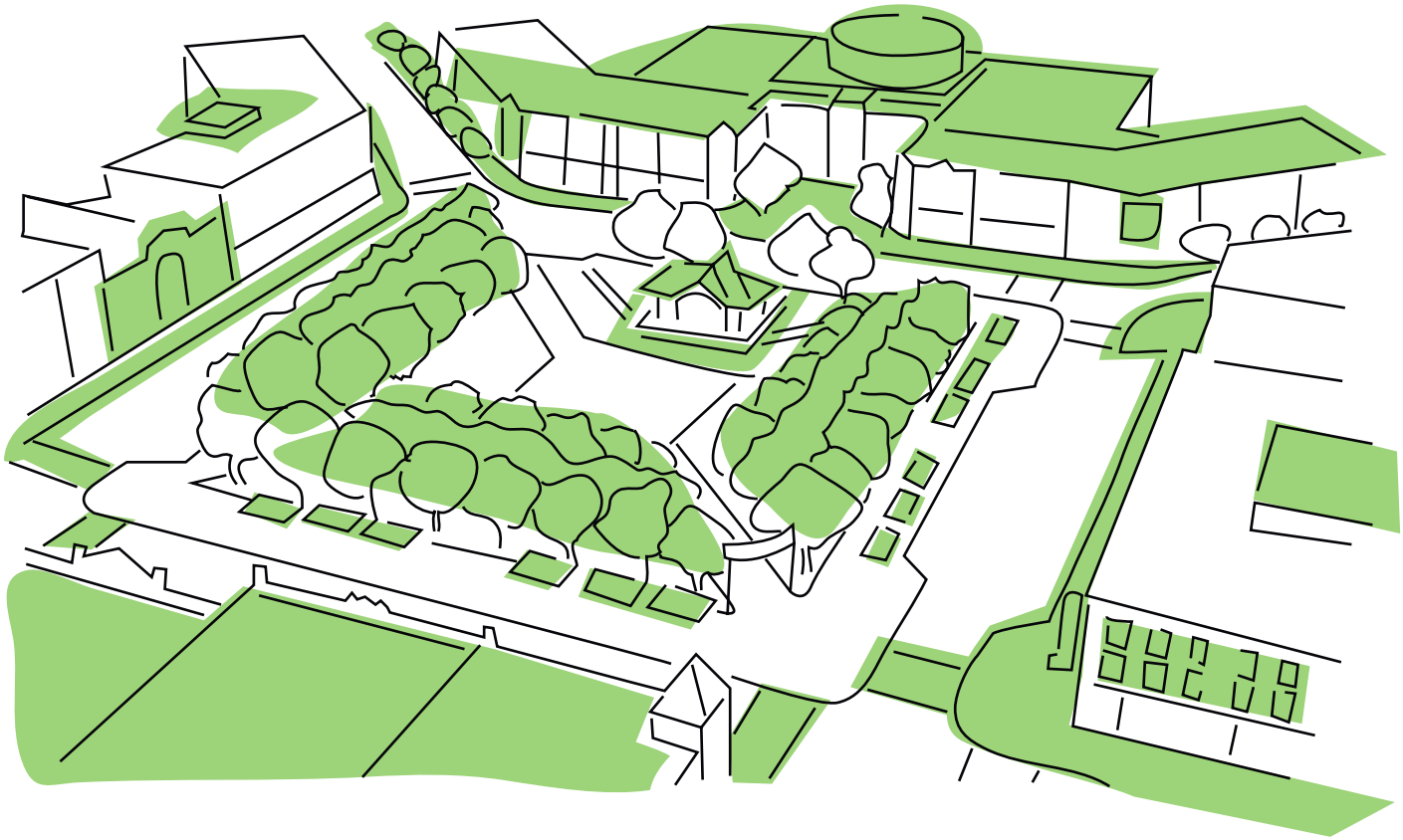
A DIVERSE AND BALANCED ECONOMY

This chapter presents an overview of the economic development program for Ankeny with a focus on the influence of the physical development of the community. The goals in this area are built upon smart planning principles to utilize the Community's resources to develop a diverse and sustainable economy within the City. There is also consideration given to Ankeny's role as a major contributor to the metropolitan Des Moines economy.



ECONOMIC DEVELOPMENT GOALS

In addressing economic development needs, Ankeny should:

Promote the emergence of Ankeny within the metropolitan area as a major employment center by stimulating growth in office, industrial, and business park development.

The City, working with businesses, education, and the community, should strive to create a vibrant local economy encouraging local enterprise, serving local and regional residents, workers and businesses, promoting stable employment and revenue by building on competitive advantages while protecting the natural environment. The City should continue to work to attract employment and investment opportunities in the bioscience, advanced manufacturing, logistics, information technology, business services, insurance and financial services sectors. Ankeny should channel its financial efforts and work with private sector partners to promote expansion in all business sectors and especially those most likely to create high quality office and mixed use business parks. Business development should occur in a highly planned manner, in areas with good accessibility to transportation corridors and appropriate city services, in harmony with the overall land use plan.

Continue the business climate that retains and expands existing business.

Because Ankeny's most valuable assets are its existing businesses, efforts should give first priority to supporting areas where enterprises already exist. These businesses and business areas are the best source of business expansion and local job growth. Ankeny needs to continue and expand efforts to create an environment of mixed use business areas to provide growth and support for business collaborations. One program focus should be to promote local entrepreneurship to build and expand locally based industry and businesses that can succeed among national and international competitors.

Encourage the development of a variety office and industrial uses, ranging from high-profile office parks to small business activity nodes.

New development along highly visible corridors should be built to a high standard of quality. In addition, the City should provide space in Ankeny for the entire range of business development that serves a growing community. It is important to accommodate not only the high-profile corporate headquarters, but also the smaller, more modest businesses which are vital components of a balanced economic development approach.

Ensure diversity in Ankeny's business base, providing employment for residents of all economic brackets.

At present, Ankeny includes a wide array of employers, employing workers of various skill levels. The City should strive to maintain such diversity in its business base as growth occurs. A general direction of this Plan is the creation of a multi-dimensional economy by providing places for all types of business to prosper. This includes new higher-end office park development, as well as growth in the industrial, retail, and service sectors. This will ensure that Ankeny residents, if they desire, can find employment without having to commute outside of the City.

Encourage appropriate location of neighborhood, community, and regional retail facilities in the City.

The retail analysis in this chapter suggests that retail development in Ankeny serves not only City residents, but also residents of other parts of Polk County. In recent years, the City has attracted retail sales from an increasingly wide radius. Because substantial population growth is anticipated in the coming years, additional retail development in the City will take place. Ankeny should ensure that neighborhood and community retail facilities are located where they are accessible to residents and new regional facilities are appropriately located and function as premiere shopping areas for City and regional residents.

Focus economic development efforts in Ankeny not only on development in new areas of the City, but also on redevelopment of existing commercial and industrial areas.

In order to maintain the quality of Ankeny's existing neighborhoods, an economic development strategy for the City should include commercial and industrial redevelopment of certain areas in the City. This includes revitalization of key corridors, development of vacant parcels in existing areas of the City, brownfield redevelopment and continued support and enhancement of older business areas throughout the community.

Create the resources necessary to carry out an economic development program.

The best intentions for economic development mean nothing unless Ankeny can devote some resources to ensuring quality economic development. In a competitive environment, the ability to make judicious and strategic investments in businesses can have benefits far beyond the cost of the original investment. Tools to reinforce existing business, attract or start new business, and help provide sites and facilities are essential. Thus, a critical goal of the economic development program must be to ensure that the foundation of quality services and infrastructure exist to give the community the ability to compete for economic development.

FACTS AND ANALYSIS

EMPLOYMENT

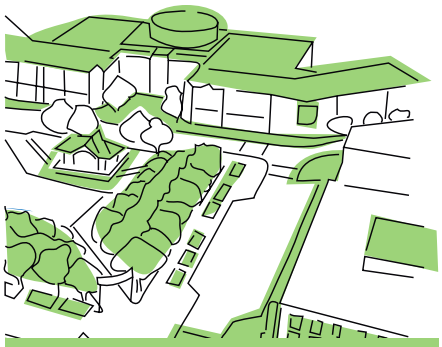
Ankeny's educational institutions, manufacturing facilities, and wholesale distribution facilities are key job centers.

Iowa Workforce Development reports that 18,776 Ankeny residents were in the labor force in 2008. However, these statistics do not indicate how many of these laborers are employed in the City. Table 10.1 presents Ankeny's principal employers. John Deere represents the largest single employer with 1,400. The Anke-

Table 10.1 **Select Employers in Ankeny**

	Employer	Product or Business Type	Number of Employees
Education/Civic			
	Ankeny Community Schools	Educational Services	843
	Des Moines Area Community College	Community College	700
	City of Ankeny	Municipal Government	208
Manufacturing			
	John Deere Des Moines Works	Manufacturer of Farm Equipment	1,400
	Tone's	Spice Manufacturing and Distribution	400
	Praxair	Manufacturer of gases and welding equipment	133
	Dickten Masch Plastics	Custom Injection mold plastics	95
	Mrs. Clark's Foods	Manufacturer of salad dressings and juices	140
Distribution			
	Perishable Distributors of Iowa	Wholesale grocery distributor	465
	Casey's General Stores	Corporate headquarters and distribution center	526
	SYSCO	Wholesale food distributor	260
Office			
	On With Life	Head injury rehabilitation facility	122
	Snyder & Associates	Engineering and design firm	140
	XPEDX	Paper and printing supplies	53
	Monsanto	Research	80

Sources: Hoovers, OneSource, Business Record Book of Lists 2010 and Ankeny Community School Distric



ECONOMIC DEVELOPMENT GOALS SUMMARY

- Promote the emergence of Ankeny within the metropolitan area as a major employment center by stimulating growth in office, industrial, and business park development.
- Continue the business climate that retains and expands existing business.
- Encourage the development of a variety office and industrial uses, ranging from high-profile office parks to small business activity nodes.
- Ensure diversity in Ankeny's business base, providing employment for residents of all economic brackets.
- Encourage appropriate location of neighborhood, community, and regional retail facilities in the City.
- Focus economic development efforts in Ankeny not only on development in new areas of the City, but also on redevelopment of existing commercial and industrial areas.
- Create the resources necessary to carry out an economic development program.

ny Community School District and Des Moines Area Community College employ a total of 1,543 people. Several wholesale distribution facilities in Ankeny also comprise a large part of the City's employment base. The five largest manufacturing facilities employ 1,768 people and the three largest distribution facilities employ 1,251. The City also includes several large retail facilities contributing to Ankeny's employment base.

Overall, the employment of Ankeny residents mirrors the employment of residents of other Polk County municipalities.

As indicated in Table 10.2, education, finance, retail and professional are the dominant business sectors for both the City and our suburban counterparts' residents. Table 10.3 also shows that the occupations of Ankeny residents are quite similar to the employment of residents of other Iowa and especially Polk County communities. An increasing number of Ankeny residents are working in the professional/scientific and management sector of the economy. Overall these employment indicators show that Ankeny residents are working in a broad range of business sectors and those that this metro area has become known for.

Ankeny's largest year 2006-2008 job type involves managerial and professional occupations.

In general, Ankeny's occupational profile is similar to that of our suburban counterparts. As shown in Table 10.3, about 48.5% of Ankeny's residents held managerial and professional positions in 2006-2008, compared with 50.4% of West Des Moines residents and 49.5 % of Urbandale residents. About 28.5% held sales and office positions which is comparable to most of the cities listed.

INCOME

Ankeny contains a larger proportion of higher income households and a smaller proportion of lower income households than many of the communities listed.

Table 10.4 presents the distribution of income in Ankeny and several Iowa communities of comparable size. 40.2% of Ankeny's households earned more than $75,000 in 2006-2008 compared to 30.7% in 1999. This figure is 41.5% for West Des Moines and 51% for Urbandale. 15.3% of Ankeny's households earned less than $25,000 compared to 16.8% in 1999.

Ankeny has a higher median income than most comparably sized Iowa communities.

Table 10.2 **Employment by Industry 2006-2008**

	Ankeny	Council Bluffs	Dubuque	Ames	West Des Moines	Urbandale	Cedar Falls	Marion*	Bettendorf
Agriculture, forestry, fishing and hunting, and mining	1%	1%	0%	2%	1%	0%	1%	0%	1%
Construction	5%	7%	3%	4%	4%	4%	4%	4%	4%
Manufacturing	6%	10%	16%	7%	5%	5%	11%	17%	16%
Wholesale trade	4%	3%	3%	2%	4%	3%	2%	3%	4%
Retail trade	11%	14%	14%	11%	12%	11%	12%	12%	11%
Transportation and warehousing, and utilities	4%	9%	4%	2%	2%	5%	3%	5%	5%
Information	3%	2%	2%	1%	3%	3%	1%	4%	3%
Finance and insurance, and real estate and rental and leasing	18%	10%	7%	4%	23%	25%	5%	9%	9%
Professional, scientific, and management, and administrative and waste management services	10%	7%	7%	7%	12%	7%	6%	9%	10%
Educational services, and health care and social assistance	22%	19%	27%	40%	21%	21%	36%	24%	21%
Arts, entertainment, and recreation, and accommodation and food services	7%	10%	10%	12%	8%	5%	12%	8%	8%
Other services, except public administration	4%	5%	4%	4%	4%	4%	4%	3%	5%
Public administration	5%	3%	2%	4%	3%	3%	2%	3%	4%

Source U.S. Census Bureau; * 2005-2007 Data

Table 10.3 Employment by Occupation 2006-2008

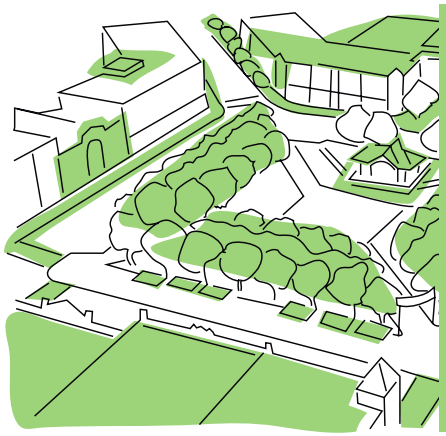
	Ankeny	Council Bluffs	Dubuque	Ames	West Des Moines	Urbandale	Cedar Falls	Marion*	Bettendorf
Management, professional, and related occupations	48.5%	23.9%	30.3%	46.5%	50.4%	49.5%	38.0%	36.8%	42.5%
Service occupations	11.6%	18.0%	20.6%	17.4%	9.0%	11.1%	21.9%	17.4%	14.3%
Sales and office occupations	28.5%	29.8%	26.9%	22.8%	29.7%	29.7%	25.6%	28.8%	25.9%
Farming, fishing, and forestry occupations	0.1%	0.6%	0.1%	0.9%	0.3%	0.0%	0.3%	0.0%	0.2%
Construction, extraction, maintenance, and repair occupations	5.9%	10.8%	6.4%	4.3%	5.4%	2.8%	5.1%	5.7%	7.1%
Production, transportation, and material moving occupations	5.4%	16.8%	15.7%	8.1%	5.2%	3.9%	9.1%	11.4%	9.9%

Source: U.S. Census Bureau; *2005-2007 Data

Table 10.4 Annual Household Income 2006-2008

	Less than $10,000	$10,000 to $14,999	$15,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 to $74,999	$75,000 to $99,999	$100,000 to $149,999	$150,000 to $199,999	$200,000 or more	Median income (dollars)	Mean income (dollars)
Ankeny	2.00%	3.00%	7.30%	7.60%	10.90%	23.00%	17.70%	19.50%	5.60%	3.40%	70,197	80,808
Council Bluffs	8.40%	5.70%	11.30%	15.20%	17.10%	19.10%	13.10%	7.60%	1.50%	1.00%	42,644	52,608
Dubuque	8.30%	6.00%	13.70%	13.00%	15.40%	21.00%	11.50%	7.60%	1.30%	2.30%	43,402	46,350
Ames	10.20%	7.30%	13.20%	13.30%	13.80%	17.40%	9.80%	9.40%	3.10%	2.50%	40,777	57,821
W. Des Moines	4.00%	3.30%	7.30%	9.70%	15.90%	18.30%	14.60%	15.80%	5.30%	5.80%	61,781	84,696
Urbandale	1.60%	2.30%	5.20%	8.40%	11.10%	20.50%	16.10%	20.20%	8.80%	5.90%	76,898	90,477
Cedar Falls	8.30%	6.00%	11.90%	11.20%	13.20%	19.70%	11.70%	12.60%	2.50%	2.90%	48,764	63,041
Marion	3.90%	2.40%	12.10%	12.10%	12.80%	21.40%	16.10%	13.20%	3.40%	2.50%	57,988	69,880
Bettendorf	4.00%	2.60%	8.10%	8.10%	13.50%	18.00%	16.10%	16.90%	5.80%	6.80%	67,956	86,876

Source: U.S. Census Bureau



EMPLOYMENT AND INCOME KEY TRENDS

- Ankeny's educational institutions, manufacturing facilities, and wholesale distribution facilities are key job centers.
- The employment of Ankeny residents mirrors the employment of residents of other Polk County municipalities.
- Ankeny contains a larger proportion of higher income households and a smaller proportion of lower income households than many of the communities listed.
- Ankeny has a higher median income than most comparably sized Iowa communities.

Table 10.5 displays median household income figures for Ankeny and other metro Des Moines communities. In 2008, the median household income in Ankeny was $70,197 compared to a 2000 figure of $55,162. Of the comparably sized cities in the state, only Urbandale has a higher household income at $76,898. During the twenty-year period, Ankeny's median household income has grown at a much higher rate when compared with other comparable communities.

RETAIL

Ankeny experienced substantial retail sales growth between 1980 and 2008.

Table 10.6 illustrates the changes in Ankeny's retail activity over time. Between 1980 and 2008, the number of retail businesses in Ankeny increased from 340 to 961, an almost threefold increase. The annual amount of sales per retail business (in 1980 dollars) increased from $386,291 in 1980 to $585,814 in 2008.

The real sales growth increased between 1980 and 2008 by more than four times. Per capita sales in Ankeny have paced with our peer cities in the study and outpaced the overall growth in the State and Polk County.

Table 10.5 **Change in Annual Household Income 1980 to 2006-2008**

	2006-2008	2000	1990	1980	% change since 1980
Ankeny	$ 70,197	$ 55,162	$ 36,582	$ 22,790	208%
Council Bluffs	$ 42,644	$ 36,221	$ 25,014	$ 15,967	167%
Dubuque	$ 43,402	$ 36,785	$ 27,027	$ 18,674	132%
Ames	$ 40,777	$ 36,042	$ 24,636	$ 16,104	153%
W. Des Moines	$ 61,781	$ 54,139	$ 41,045	$ 23,575	162%
Urbandale	$ 76,898	$ 59,744	$ 42,686	$ 24,728	211%
Cedar Falls	$ 48,764	$ 40,226	$ 28,003	$ 20,038	143%
Marion	$ 57,988	$ 48,591	$ 33,436	$ 21,515	170%
Bettendorf	$ 67,956	$ 54,217	$ 40,174	$ 26,214	159%

Source: U.S. Census Bureau

Table 10.6 **Retail Sales Data for Ankeny**

Year	Number of Firms	Sales per retail firm	Total Taxable Retail Sales	Real Sales ($)	Ankeny Per Capita Sales ($)	State Per Capita Sales	Polk County Per Capita Sales ($)	Peer City Per Capita Sales ($)
FY1980	340	386,291	53,942,833	131,338,877	8,969	10,945	16,275	9,579
FY1985	396	331,168	72,790,024	130,976,819	7,898	9,154	15,340	8,372
FY1990	454	337,864	101,360,816	153,221,490	8,441	9,795	17,767	9,588
FY1995	574	421,830	185,773,977	242,235,912	11,305	10,351	18,471	11,170
FY2000	643	516,432	277,266,781	331,936,480	12,710	11,509	19,898	13,973
FY2001	659	527,342	296,942,692	347,255,006	12,640	11,345	19,010	13,698
FY2002	697	553,901	336,282,498	386,207,232	13,686	11,150	18,235	14,382
FY2003	710	591,548	371,959,626	419,999,094	14,267	11,058	18,098	14,822
FY2004	727	633,047	415,484,756	460,383,112	15,008	10,982	17,112	15,361
FY2005	768	654,403	466,108,968	502,253,962	14,552	10,902	16,843	15,511
FY2006	795	676,871	514,316,083	537,943,527	14,927	11,009	16,754	15,832
FY2007	898	610,975	538,000,163	548,503,006	14,185	10,854	16,057	15,580
FY2008	961	585,814	562,967,614	562,967,614	13,872	11,074	15,709	15,383

SOURCE: Iowa State University Regional Capacity Analysis Program (ReCAP)

Ankeny has become a more regional retail center since 1980 and has room for more growth.

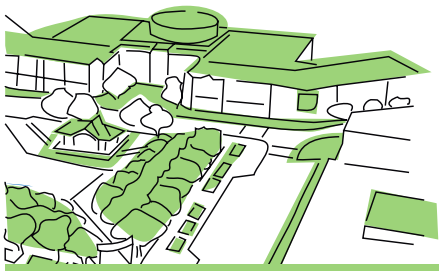
Trends in retail sales activity are also illustrated by a comparison of the City's actual and potential sales and a City's "pull factor." The actual versus potential sales allow for a measure of surplus or leakage of retail sales for a community. These numbers from Table 10.7 indicate that overall Ankeny is underperforming and could attract more of the available retail dollars being spent when compared to other Iowa cities with comparable markets.

The pull factor is a simpler indicator of how a community fares with respect to retail sales. If the per capita sales are $1,000 throughout the state and $1,500 in the local areas, the local area's "pull factor" is 1.5. However, if per capita local sales are $950, the pull factor would be 0.95. Thus, a pull factor over 1.00 means that a com-

Table 10.7 **Retail Sales Performance for Ankeny**

Year	Actual Sales	Potential Sales	Surplus (Leakage)	% Potential	Sales Capacity	Over (under Capacity)	% Capacity
FY1980	131,338,877	256,817,948	(125,479,070)	-48.9%	180,174,274	(48,835,396)	-27.1%
FY1985	130,976,819	241,553,930	(110,577,111)	-45.8%	177,077,965	(46,101,146)	-26.0%
FY1990	153,221,490	294,678,094	(141,456,605)	-48.0%	231,199,949	(77,978,459)	-33.7%
FY1995	242,235,912	364,160,389	(121,924,477)	-33.5%	314,981,867	(72,745,954)	-23.1%
FY2000	331,936,480	486,644,325	(154,707,845)	-31.8%	473,583,423	(141,646,943)	-29.9%
FY2001	347,255,006	509,752,581	(162,497,575)	-31.9%	493,419,618	(146,164,612)	-29.6%
FY2002	386,207,232	508,441,273	(122,234,040)	-24.0%	526,062,942	(139,855,710)	-26.6%
FY2003	419,999,094	525,144,608	(105,145,514)	-20.0%	565,035,312	(145,036,218)	-25.7%
FY2004	460,383,112	545,160,258	(84,777,146)	-15.6%	612,480,581	(152,097,469)	-24.8%
FY2005	502,253,962	610,232,518	(107,978,556)	-17.7%	697,744,981	(195,491,019)	-28.0%
FY2006	537,943,527	650,786,911	(112,843,385)	-17.3%	752,710,282	(214,766,756)	-28.5%
FY2007	548,503,006	686,903,221	(138,400,215)	-20.1%	792,899,354	(244,396,348)	-30.8%
FY2008	562,967,614	726,227,819	(163,260,205)	-22.5%	793,163,142	(230,195,528)	-29.0%

SOURCE: Iowa State University Regional Capacity Analysis Program (ReCAP)



RETAIL TREND

- Ankeny has become a regional retail center since 1980 and has room for more growth and development.

munity is experiencing more retail sales activity than a comparable Iowa community, while a pull factor of less than 1.00 indicates below average retail sales activity.

As shown in Table 10.8, Ankeny had a pull factor of 0.61 in 1980, indicating that Ankeny was a net exporter of retail sales dollars when compared with state averages. Thus, at that time, Ankeny's retail businesses tended to not draw residents of surrounding communities and Ankeny residents tended to patronize businesses in other communities. This was largely attributable to Ankeny's lack of major shopping area at that time, as well as the City's close proximity to shopping areas in metropolitan Des Moines.

However, by 2008, the pull factor increased to .93, indicating that by that year Ankeny while still exporting retail sales dollars the community was fairing far better at keeping those dollars close to home and attracting more regional shoppers. This is attributable to the development of regional retail facilities in Ankeny in recent years. In this regard, Ankeny is performing better than the statewide peer group.

Despite recent increases, retail sales activity in Ankeny is performing below what might be expected compared to other Des Moines metro area communities.

Comparing a City's actual amount of retail sales with the amount of sales expected for the City also provides an indicator of trends in retail activity. The expected sales figure is derived by multiplying the City's population by the state per capita sales by the typical pull factor for similarly-sized cities by the index of income.

Despite its increase in retail activity in recent years, the City of Ankeny draws less retail activity than other Des Moines metro communities. As indicated in Table 10.9, the amount of retail sales in Ankeny in 2008 was $562,967,614, or 22.5% below what is expected for potential sales. The figure for expected sales in Ankeny in 2008 was $726,227,819. This disparity continues to be attributable to our commuting workforce and Ankeny's close proximity to major regional shopping areas elsewhere in metropolitan Des Moines.

Ankeny's lower-than-expected retail activity is also illustrated in Table 10.10, which compares the City's pull factor to those of similarly sized communities around the State. In 2008, while Ankeny had a pull factor of .93, West Des Moines had a pull factor of 1.37 and Ames a pull factor of 1.24. This indicates that although Ankeny has become more of a regional retail center in the past 28 years, the City does not attract retail sales from as large a region as do a few other Iowa communities of similar size.

However, the communities similar in size to Ankeny that are located a similar distance from urban centers, such as Marion (located adjacent to Cedar Rapids) and Bettendorf (located adjacent to Davenport), have pull factors considerable lower than Ankeny's.

Thus Ankeny fares quite well with respect to retail sales considering its close proximity to the Des Moines urban center.

Table 10.8 **Retail Sales Indicators for Ankeny**

Year	Number of Firms	Sales per retail firm	Ankeny Per Capita Sales Index	Ankeny Pull Factor	Polk County Pull Factor	Peer Group Pull Factor
FY1980	340	386,291	0.82	0.61	1.18	0.55
FY1985	396	331,168	0.86	0.65	1.34	0.57
FY1990	454	337,864	0.86	0.62	1.39	0.59
FY1995	574	421,830	1.09	0.80	1.38	0.66
FY2000	643	516,432	1.10	0.82	1.36	0.75
FY2001	659	527,342	1.11	0.82	1.30	0.74
FY2002	697	553,901	1.23	0.91	1.29	0.80
FY2003	710	591,548	1.29	0.96	1.29	0.83
FY2004	727	633,047	1.37	1.01	1.22	0.86
FY2005	768	654,403	1.33	0.98	1.21	0.88
FY2006	795	676,871	1.36	0.99	1.18	0.88
FY2007	898	610,975	1.31	0.96	1.15	0.88
FY2008	961	585,814	1.25	0.93	1.12	0.86

SOURCE: Iowa State University Regional Capacity Analysis Program (ReCAP)

Table 10.9 Geographic Competition Performance Measures for Ankeny

	Actual Sales	Potential Sales	Sales Capacity	% of Potential	% of Capacity
Ankeny	562,967,614	726,227,819	793,163,142	-22.5%	-29.0%
Altoona	341,749,040	247,868,058	270,713,683	37.9%	26.2%
Clive	373,898,249	259,714,759	283,652,276	44.0%	31.8%
Urbandale	560,773,618	681,883,220	744,731,368	-17.8%	-24.7%
W. Des Moines	1,397,818,852	793,715,718	1,231,065,251	76.1%	13.5%
Ames	721,929,548	633,330,636	982,305,530	14.0%	-26.5%
Des Moines	3,470,691,016	2,857,150,331	4,431,483,979	21.5%	-21.7%

SOURCE: Iowa State University Regional Capacity Analysis Program (ReCAP)

Table 10.10 Retail Pull Factor Index FY 2008 for Ankeny

	Per Capita Sales by City	Pull Factor
Ankeny	$13,872	0.93
Council Bluffs	$15,261	1.46
Dubuque	$17,246	1.6
Ames	$13,187	1.24
W. Des Moines	$25,542	1.37
Urbandale	$14,717	0.85
Cedar Falls	$12,487	1.15
Marion	$9,810	0.78
Bettendorf	$9,793	0.59

SOURCE: Iowa State University Regional Capacity Analysis Program (ReCAP)

ECONOMIC DEVELOPMENT MARKET AREAS

The following data is derived from the CBRE/Hubbell Commercial 2010 Real Estate Market Survey and is a snapshot of the marketplace as it exists and performs during a short (3 year) historical window. This data allows a comparison of Ankeny versus other market sub-areas within the Des Moines Metropolitan region during a time of economic recession and slow recovery. This information allows us to look at Ankeny in terms of its current market share and in a short term window of time the activity that has occurred. This information is valuable from the perspective of where we are today and as a review to how difficult or challenging it may be to capture a larger share of the market in certain categories.

Office

Ankeny has approximately 1.6% of the Metro Area office inventory, but only 0.1 % of the Metro Area Class A inventory.

Table 10.11 illustrates the overall inventory of office space within the Metro Area. This includes the entire market and does not single out corporate office or "competitive office" square footages. Ankeny stays on par with South Des Moines, and Northeast Des Moines markets; however lags well behind the inventory of office

a. Metro North Business Park; b. Ankeny Uptown District Retail Shops; c. Hotel at Metro North Business Park; d. Northfield Office Park

MARKET AREA TRENDS

- Ankeny has approximately 1.6% of the Metro Area office inventory, but only 0.1 % of the Metro Area Class A inventory.
- Ankeny has approximately 7.9% of the Metro Area flex space inventory.
- Ankeny has approximately 9.2% of the Metro Area warehouse inventory
- Ankeny has approximately 11.9% of the Metro Area manufacturing space inventory.

space in the western suburbs, and Central Business District (CBD) core and fringe areas. Categories of office inventory are broken into types of space related to "full service" lease rates which are often indicative of the quality of construction and the support services or environment in which the space is located. Ankeny's mix of office spaces is represented in 4 % Class A space, 63% Class B space and 33% Class C space. The first true Class A space constructed in Ankeny just occurred in Prairie Trail and is owned by the Iowa Soybean Association.

Table 10.12 represents the percentage of the office space inventory that is occupied. Ankeny's occupancy rates track generally with the rest of the metropolitan area. The lowest occupancy rate is within the Class B office spaces which are more likely to be the competitive or tenant occupied spaces. In Ankeny, 66% of the office space is considered as "competitive" space. Fluctuations in these occupancy numbers would be expected because of the available inventory within the Metro Area.

The absorption of office space in the Ankeny market has been positive over the last three years and attributable to a few projects. In 2010 Ankeny and the Western Suburbs were the only two market sub-areas to see positive absorption.

Office is one component of Ankeny's market as it relates to "employment" centers and business mix and represents 8.3% of the total space identified and studied in the CBRE/Hubbell Commercial study. According to the study, with 27,248,000 sq. ft. of office space in the Metro Des Moines inventory and an occupancy rate of 88.9% in 2010; a total of 3,024,584 sq. ft. of office is available. In total, office, flex, warehouse and manufacturing space in Ankeny totals 5,235,759 square feet.

Flex Space

Ankeny has approximately 7.9% of the Metro Area flex space inventory.

Table 10.14 illustrates the overall inventory of flex space within the Metro Area. This includes the entire market square footages. Ankeny has substantially more space than the South Des Moines and Northeast Des Moines markets; however lags behind the inventory of flex space in the Northeast Des Moines, Western suburbs, and CBD fringe areas.

Table 10.11 **Office Inventory - Entire Market**

	Class A			Class B			Class C			Total (SF)			Total Buildings		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	7,497,175	7,871,815	8,122,441	2,235,530	2,332,678	2,426,826	2,248,146	2,248,146	2,243,110	11,980,851	12,452,639	12,792,377	318	329	333
CBD Core	5,109,911	5,629,982	5,629,982	1,581,927	1,581,927	1,581,927	2,686,483	2,686,483	2,686,483	9,378,321	9,898,392	9,898,392	54	54	56
CBD Fringe	254,862	254,862	254,862	1,530,845	1,530,845	1,537,857	611,872	576,234	576,234	2,397,579	2,361,941	2,368,953	66	64	65
Northwest Des Moines	79,296	79,296	79,296	84,199	84,199	84,199	744,934	744,934	744,934	908,429	908,429	908,429	60	60	60
Northeast Des Moines	0	0	0	121,407	121,407	121,407	274,015	274,015	274,015	395,422	395,422	395,422	25	25	25
South Des Moines	0	0	0	216,773	216,773	216,773	235,360	235,360	235,360	452,133	452,133	452,133	23	23	23
Ankeny	0	0	16,732	200,058	271,868	271,868	144,201	144,201	144,201	344,259	416,069	432,801	29	31	32
Greater Des Moines Total	**12,941,244**	**13,835,955**	**14,103,313**	**5,970,739**	**6,139,697**	**6,240,857**	**6,945,011**	**6,909,373**	**6,904,337**	**25,856,994**	**26,885,025**	**27,248,507**	**575**	**586**	**594**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.12 Office Occupancy - Entire Market

	Class A			Class B			Class C			Total (SF)		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	93.8%	88.7%	89.9%	86.5%	85.0%	81.4%	88.3%	85.4%	84.3%	91.4%	87.4%	87.3%
CBD Core	98.3%	95.5%	96.0%	85.2%	82.6%	80.2%	90.5%	92.0%	91.0%	93.8%	92.5%	92.1%
CBD Fringe	96.9%	99.3%	97.3%	95.3%	88.3%	85.4%	86.6%	85.5%	84.9%	93.2%	88.8%	86.5%
Northwest Des Moines	83.0%	88.0%	89.0%	86.7%	91.0%	91.0%	90.1%	82.8%	77.6%	89.2%	84.0%	79.8%
Northeast Des Moines	N/A	N/A	N/A	95.9%	97.9%	97.9%	90.0%	92.6%	92.5%	91.8%	94.3%	94.2%
South Des Moines	N/A	N/A	N/A	94.2%	95.4%	93.2%	95.3%	97.4%	89.2%	94.8%	96.4%	91.1%
Ankeny	N/A	N/A	100.0%	78.9%	82.5%	84.1%	94.0%	94.8%	89.4%	85.2%	86.8%	86.5%
Greater Des Moines Total	**95.6%**	**91.7%**	**92.5%**	**88.6%**	**85.8%**	**83.0%**	**89.6%**	**88.6%**	**86.9%**	**92.4%**	**89.6%**	**88.9%**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.13 Office Absorption - Entire Market

	Class A			Class B			Class C			Total (SF)		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	508,425	(50,050)	319,775	72,770	49,043	(7,340)	(49,459)	(65,196)	(28,975)	531,736	(66,203)	283,460
CBD Core	312,368	353,590	28,150	(25,396)	(41,130)	(37,966)	(21,492)	40,297	(26,865)	265,480	352,757	(36,681)
CBD Fringe	4,588	6,117	(5,097)	17,335	(107,159)	(38,406)	(30,660)	(37,201)	(3,457)	(8,737)	(138,243)	(46,960)
Northwest Des Moines	555	3,965	793	(3,621)	3,621	0	(5,959)	(54,380)	(38,737)	(9,025)	(46,794)	(37,944)
Northeast Des Moines	N/A	N/A	N/A	19,653	2,428	0	(27,402)	7,124	(274)	(7,749)	9,552	(274)
South Des Moines	N/A	N/A	N/A	45,492	2,601	(4,769)	7,532	4,943	(19,300)	53,024	7,544	(24,069)
Ankeny	N/A	N/A	16,732	1,249	66,445	4,350	5,480	1,154	(7,787)	6,729	67,599	13,295
Greater Des Moines Total	**825,936**	**313,622**	**360,353**	**127,482**	**(24,151)**	**(84,131)**	**(121,960)**	**(103,259)**	**(125,395)**	**831,458**	**186,212**	**150,827**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.14 Flex Inventory

	Total (SF)			Total Buildings		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	3,242,864	3,242,864	3,273,236	90	90	91
CBD Core	0	0	0	0	0	0
CBD Fringe	735,885	735,885	735,885	14	14	14
Northwest Des Moines	99,161	99,161	99,161	6	6	6
Northeast Des Moines	531,234	586,110	586,110	20	21	21
South Des Moines	237,370	237,370	237,370	5	5	5
Ankeny	421,710	421,710	421,710	16	16	16
Greater Des Moines Total	**5,268,224**	**5,323,100**	**5,353,472**	**151**	**152**	**153**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

a. Albaugh Headquarters; b. Casey's Corporate Office in Ankeny; c. Ankeny Business Park sign; d. Retail Shops @ Delaware Avenue

Table 10.15 represents the percentage of the flex space inventory that is occupied. Ankeny's occupancy rates track slightly above or equal to the rest of the metropolitan area. Fluctuations in these occupancy numbers would be expected because of the available inventory within the Metro Area.

The absorption of flex space in the Ankeny market has been positive over two of the last three years and attributable to a few projects. In the past three years Ankeny and the Northeast Des Moines markets were the only two market sub-areas to see positive absorption.

Flex space has been a strong component of Ankeny's market as it relates to "employment" centers and business mix and represents 8.1% of the total space in Ankeny and 7.9% of the Metro market identified and studied in the CBRE/Hubbell Commercial study.

According to the study, with 5,353,472 sq. ft. of flex space in the Metro Des Moines inventory and an occupancy rate of 83.6% in 2010; a total of 877,969 sq. ft. of flex space is available. In total, office, flex, warehouse and manufacturing space in Ankeny totals 5,235,759 square feet.

Warehouse

Ankeny has approximately 9.2% of the Metro Area warehouse inventory.

Table 10.17 illustrates the overall inventory of office space within the Metro Area. This includes the entire market

Table 10.15 **Flex Occupancy**

	Total (SF)		
Submarket	**2008**	**2009**	**2010**
Western Suburbs	85.6%	89.4%	83.3%
CBD Core	N/A	N/A	N/A
CBD Fringe	89.4%	89.1%	88.0%
Northwest Des Moines	94.9%	87.6%	90.6%
Northeast Des Moines	85.3%	79.9%	86.0%
South Des Moines	81.5%	59.1%	60.4%
Ankeny	85.0%	89.1%	88.0%
Greater Des Moines Total	**86.0%**	**86.8%**	**83.6%**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.16 **Flex Absorption**

	Total (SF)		
Submarket	**2008**	**2009**	**2010**
Western Suburbs	6,486	123,229	(172,515)
CBD Core	N/A	N/A	N/A
CBD Fringe	7,359	(2,208)	(8,095)
Northwest Des Moines	496	(7,239)	2,975
Northeast Des Moines	25,554	15,159	35,753
South Des Moines	6,646	(53,171)	3,086
Ankeny	9,699	17,290	(4,639)
Greater Des Moines Total	**56,240**	**93,060**	**(143,435)**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

and does not single out "corporate warehousing" such as Casey's or "competitive warehousing" such as Jacobsen's square footages. Ankeny has more inventory than the Northwest Des Moines and CBD Fringe sub-markets; however lags behind the inventory of warehousing in the western suburbs, Northeast Des Moines and South Des Moines areas.

Table 10.18 represents the percentage of the warehousing space inventory that is occupied. Ankeny's occupancy rates tracks higher than all but the South Des Moines market area. At 98.5%, our market would be considered fully occupied. Fluctuations in these occupancy numbers would be expected because of the available inventory within the Metro Area.

The absorption of warehousing space in the Ankeny market has been positive over the last three years and attributable to a few projects. Table 10.19 shows that in 2010 Ankeny, Northeast Des Moines and the Western Suburbs were the market sub-areas with the greatest positive absorption.

Warehousing is one of the stronger components of Ankeny's market as it relates to "employment" centers and business mix and represents 9.3% of the total metro area space identified and studied in the CBRE/Hubbell Commercial study. According to the study, with 30,758,059 sq.

Table 10.17 Warehouse Inventory

	Pre 1970			Post 1970			Total (SF)			Total Buildings		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	1,347,993	1,347,993	1,347,993	6,760,567	7,253,889	7,266,945	8,108,560	8,601,882	8,614,938	183	187	188
CBD Core	0	0	0	0	0	0	0	0	0	0	0	0
CBD Fringe	2,425,658	2,066,188	1,997,028	206,065	206,065	206,065	2,631,723	272,253	2,203,093	67	64	62
Northwest Des Moines	846,877	793,879	793,979	520,086	520,086	520,086	1,366,963	1,314,065	1,314,065	72	71	71
Northeast Des Moines	4,387,897	4,387,897	4,426,029	7,547,983	7,813,943	7,905,837	11,935,880	12,201,840	12,331,866	234	239	242
South Des Moines	1,629,974	1,629,974	1,596,438	1,851,324	1,851,324	1,851,324	3,481,298	3,481,298	3,447,762	56	56	55
Ankeny	271,610	271,610	271,610	2,574,725	2,574,725	2,574,725	2,846,335	2,846,335	2,846,335	65	65	65
Greater Des Moines Total	**10,910,009**	**10,497,541**	**10,433,077**	**19,460,750**	**20,220,032**	**20,324,982**	**30,370,759**	**28,717,673**	**30,758,059**	**677**	**682**	**683**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.18 Warehouse Occupancy

	Pre 1970			Post 1970			Total (SF)		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	93.1%	97.5%	94.6%	96.6%	91.1%	92.2%	96.0%	92.1%	92.6%
CBD Core	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CBD Fringe	65.5%	67.9%	62.8%	97.6%	94.2%	90.0%	68.0%	70.3%	65.4%
Northwest Des Moines	74.0%	84.3%	80.3%	92.6%	96.9%	97.2%	81.1%	89.3%	87.0%
Northeast Des Moines	85.3%	80.7%	83.1%	96.4%	97.0%	96.3%	92.3%	91.1%	91.5%
South Des Moines	98.8%	97.3%	97.2%	98.1%	97.4%	99.5%	98.4%	97.4%	98.5%
Ankeny	96.6%	92.4%	100.0%	93.8%	97.4%	98.3%	94.0%	96.9%	98.5%
Greater Des Moines Total	**83.3%**	**83.5%**	**83.1%**	**96.2%**	**94.9%**	**95.3%**	**91.5%**	**91.0%**	**91.2%**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.19 **Warehouse Absorption**

	Pre 1970			Post 1970			Total (SF)		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	(46,368)	59,312	(39,092)	409,730	77,585	91,830	363,362	136,897	52,738
CBD Core	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CBD Fringe	(203,005)	(185,864)	(148,808)	(4,946)	(7,006)	(8,655)	(207,951)	(192,870)	(157,463)
Northwest Des Moines	(33,199)	42,635	(31,759)	(19,763)	22,364	1,560	(52,962)	64,999	(30,199)
Northeast Des Moines	(35,489)	(201,843)	136,997	(31,736)	303,269	33,796	(67,225)	101,426	170,793
South Des Moines	76,609	(24,450)	(34,227)	16,249	(12,959)	38,878	92,858	(37,409)	4,651
Ankeny	0	(11,408)	20,642	101,440	92,690	23,173	101,440	81,282	43,815
Greater Des Moines Total	**(241,452)**	**(321,618)**	**(96,247)**	**470,974**	**475,943**	**180,582**	**229,522**	**154,325**	**84,335**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

a. John Deer Sign; b. John Deer's Manufacturing Facility in Ankeny in Ankeny; c. Tones Spices Manufacturing in Ankeny;

ft. of warehouse space in the Metro Des Moines inventory and an occupancy rate of 91.2% in 2010; a total of 2,706,709 sq. ft. of warehouse is available. In total, office, flex, warehouse and manufacturing space in Ankeny totals 5,235,759 square feet; warehousing is 54% of that space.

Manufacturing

Ankeny has approximately 11.9% of the Metro Area manufacturing space inventory.

Table 10.20 illustrates the overall inventory of manufacturing space within the Metro Area. Ankeny has the third highest inventory of manufacturing space, exceeded only by the Western Suburbs and Northeast Des Moines markets. This is due in large part to the John Deere Des Moines Works Facility.

Table 10.21 represents the percentage of the manufacturing space inventory that is occupied. Ankeny's occupancy rate is the highest among all other metropolitan sub-market areas. Little fluctuation in Ankeny's occupancy numbers would be expected because of the owner occupied status of most of our space. John Deere, Tone's Spices, Accumold, etc. make up a large portion of that space.

The absorption of manufacturing space in the Ankeny market is directly tied to and attributable to a few businesses. There is little or no manufacturing space available in Ankeny.

Manufacturing is the second largest component of Ankeny's market as it relates to "employment" centers and business mix and represents 29.3% of the total office, flex, warehouse and manufacturing space identified in Ankeny. That number is 11.9% of similar space in the Metro Area.

According to the study, with 12,941,590 sq. ft. of manufacturing space in the Metro Des Moines inventory and an occupancy rate of 95.4%% in 2010, a total of 595,313 sq. ft. of manufacturing space is available Metro wide. In total, office, flex, warehouse and manufacturing space in Ankeny totals 5,235,759 square feet.

Commuting Characteristics

Ankeny residents tend to have a slightly longer commute than residents of other Polk County communities.

Table 10.23 shows that Ankeny residents had a mean commute time of 20.4 minutes in 2008, which is slightly longer that the west side suburbs. This is likely attributable to the City's location with respect to the large regional employment centers, such as west suburban and downtown Des Moines. Ankeny is located slightly farther from these centers than other Polk County communi-

Table 10.20 Manufacturing Inventory

	Pre 1970			Post 1970			Total (SF)			Total Buildings		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	1,325,867	1,325,867	1,325,867	1,636,578	1,676,957	1,705,484	2,962,445	3,002,824	3,031,351	58	59	60
CBD Core	0	0	0	0	0	0	0	0	0	0	0	0
CBD Fringe	267,661	267,661	267,661	74,710	74,710	64,900	342,371	342,371	332,561	13	13	12
Northwest Des Moines	795,857	795,857	795,857	50,587	50,587	50,587	846,444	846,444	846,444	12	12	12
Northeast Des Moines	4,412,616	4,412,616	4,412,616	1,367,607	1,571,163	1,584,363	5,780,223	5,983,779	5,996,979	70	71	72
South Des Moines	388,600	388,600	388,600	781,062	781,062	810,742	1,169,662	1,169,662	1,199,342	19	19	19
Ankeny	565,921	565,921	565,921	968,992	968,992	968,992	1,534,913	1,534,913	1,534,913	13	13	13
Greater Des Moines Total	**7,756,522**	**7,756,522**	**7,756,522**	**4,879,536**	**5,123,471**	**5,185,068**	**12,636,058**	**12,879,993**	**12,941,590**	**185**	**187**	**188**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.21 Manufacturing Occupancy

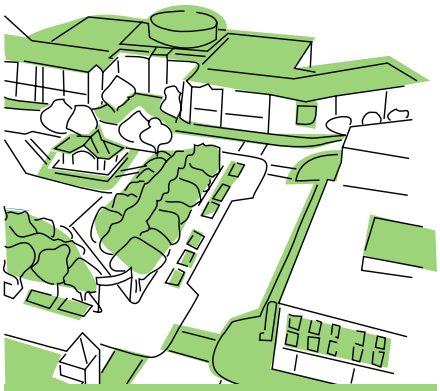
	Pre 1970			Post 1970			Total (SF)		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	97.8%	98.9%	93.0%	98.8%	98.8%	94.7%	98.4%	98.9%	94.0%
CBD Core	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CBD Fringe	65.2%	85.6%	85.6%	75.3%	86.1%	71.5%	67.4%	85.7%	82.9%
Northwest Des Moines	93.7%	93.7%	93.7%	100.0%	100.0%	100.0%	94.0%	94.0%	94.0%
Northeast Des Moines	97.6%	98.0%	96.2%	100.0%	98.5%	100.0%	98.2%	98.1%	97.2%
South Des Moines	100.0%	96.0%	96.0%	90.4%	84.5%	85.1%	93.6%	88.3%	88.6%
Ankeny	100.0%	100.0%	100.0%	99.6%	99.6%	99.6%	99.8%	99.8%	99.8%
Greater Des Moines Total	**96.4%**	**97.3%**	**95.3%**	**97.6%**	**96.5%**	**95.5%**	**96.9%**	**97.0%**	**95.4%**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010

Table 10.22 Manufacturing Absorption

	Pre 1970			Post 1970			Total (SF)		
Submarket	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**	**2008**	**2009**	**2010**
Western Suburbs	55,686	14,585	(78,226)	55,610	41,571	(43,417)	111,296	56,156	(121,643)
CBD Core	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CBD Fringe	(38,543)	54,603	0	(10,385)	8,069	(17,922)	(48,928)	62,672	(17,922)
Northwest Des Moines	0	0	0	0	0	0	0	0	0
Northeast Des Moines	4,413	17,650	(79,427)	97,381	179,989	36,767	101,794	197,639	(42,660)
South Des Moines	30,311	(15,544)	0	80,449	(46,083)	29,944	110,760	(61,627)	29,944
Ankeny	0	0	0	72,915	0	0	72,915	0	0
Greater Des Moines Total	**51,867**	**71,294**	**(157,653)**	**295,970**	**183,546**	**5,372**	**347,837**	**254,840**	**(152,281)**

Source: CBRE/Hubbell Greater Des Moines Real Estate Market Survey 2010



COMMUTING TRENDS

- Ankeny residents tend to have a slightly longer commute than residents of other Polk County communities.

FUTURE OPPORTUNITIES

- Mixed use Business and Office Park Opportunities
- Redevelopment Areas
- Retail Development

REDEVELOPMENT AREAS

- Uptown Neighborhood
- Faith Baptist College Neighborhood
- Ordnance Road Area
- South Ankeny Boulevard Corridor Redevelopment

RETAIL DEVELOPMENT ELEMENTS

- Neighborhood Orientation of Retail Facilities.
- Physical Improvements to Major Retail Districts.
- Land Use Controls.

Table 10.23 **Commuting Characteristics**

	Mean Travel Time to Work (in minutes)
Altoona *	20.4
Ames	15.3
Ankeny	20.4
Clive *	16.9
Des Moines	18.3
Indianola *	21.9
Newton *	14.8
Polk County	18.5
Urbandale	17.8
W.Des Moines	16.3

* 2000 data; Source: US Census (workers 16 years and older); 2006-2008 American Community Survey 3-Year Estimates

ties. In addition, Ankeny is an attractive place to live for households in which one individual works in Ames and another in Des Moines. Assuming an average travel speed of 40 miles per hour, Ankeny residents travel an average of 13.4 miles to work. This is a key statistic as we continue to strive to be more sustainable and become a city where our residents can find a variety of employment opportunities within the community or a more efficient commute time.

AN INVESTMENT IN ECONOMIC DEVELOPMENT

The Land Use Plan and analysis work presented in Chapter 5 indicated several areas in and around Ankeny where future commercial, office, and industrial development and redevelopment should or could occur. These include major business park and industrial areas near Interstate 35's interchanges with Oralabor Road, 1st Street, NE 36th Street and Corporate Woods Drive, as well as within the Prairie Trail project and other potential mixed use sites along 36th Street. Additional neighborhood and community retail development is expected to occur throughout the City with regional retail development focused in the Delaware Avenue and Oralabor Road corridors; as well as in the Prairie Trail commercial center "The District".

The Ankeny retail market, while strong, has some gaps that would be expected to fill as community growth continues. In addition, Ankeny should continue to grow as a regional retail center. As the statistics show, Ankeny's strongest market segments outside of retail are warehouse and manufacturing. Warehousing markets, while down now because of the economy and the influx of inventory will be slow to return; however, Ankeny continues to be in the right location to capitalize on that segment of the market. Manufacturing will slowly recover; but will never be as strong a new growth market for Ankeny as it has been in past decades. While we are still well suited to attract this type of business, our primary focus should be on service to existing business to encourage retention and expansion.

Flex space continues to be a growing style of development that is capable of attracting a variety of businesses and uses. Proper location and site development could allow for some very attractive

business park areas with a variety of primary and service businesses. Ankeny has some outstanding corporate office users and a variety of other small office facilities. This market continues to be very difficult to attract, and is more likely to favor Ankeny as a location as the community grows in population and amenities. The current inventory of vacant office in the metro area will make for a slow turnaround and will continue to require Ankeny to be aggressive and creative in the tools we use to attract this market.

The land use plan identifies areas of the community that we need to promote for quality new development so that Ankeny is ready to receive its share of the metro area's employment growth. The City needs to continue to partner with others to maintain, improve and create exciting and vibrant business districts for all parts of the community. This section presents ideas that could become strategies for moving the community forward and fulfilling the Council goals for the City's economic development effort.

AN ONGOING EFFORT

Ankeny should continue to utilize its experience and resources to engage in partnerships with community organizations, businesses, developers, builders and others to ensure a variety of quality business and economic development projects are encouraged.

The combination of City employees and others engaged in the business, finance and real estate industries should continue as unique and innovative partnerships to ensure that all elements of an attractive and leading edge community are present. This includes responsive standards and processes, as well as focused incentive programs and unique business park areas to assist in growing, attracting and retaining a broad mix of services and businesses. These partnerships and economic development tools need to set Ankeny apart from other communities, especially those in this metro area. Ankeny has the opportunity to combine quality of life with a positive business climate to promote employment and business growth. Key outcomes for these efforts should be:

- Retention, expansion, and improvement of existing local businesses.
- Attraction of new business matched to the desires of the community.
- Start-up of new businesses.

The effort should touch on a broad spectrum of its economic objectives and embody the following features:

- Be comprehensive and flexible in creating a broad spectrum of businesses and employment opportunities.
- Be sustainable in the use and return of capital funds
- Produce resources and results that improve all aspects of community, create a civic energy.
- Capitalize on partnerships that leverage all types of resources from a variety of sources.
- Involve and engage community members in business, industry, education, natural resources and government
- Be transparent in both process and outcome to allow for accountability and performance reporting.

MIXED USE BUSINESS AND OFFICE PARK OPPORTUNITIES

Ankeny should continue to capitalize on its existing mixed use business and office park land resources and add to that mix only as the market and demand warrant those additions.

The City has reserved significant sites for future mixed use business development with employment opportunities, mostly located along Interstate 35; but also including the Vintage Business Park in Prairie Trail. The City continues to make key investments in infrastructure to ensure that these areas have a foundation for success. The City should continue to partner with owners and developers to package and market these mixed use business and office park sites to ensure competitiveness within the regional market.

Possible elements of these partnerships could include:

- Increasing and targeting marketing efforts for land within the existing business areas and parks.
- Encouraging relocation of non compatible businesses from older, in-city areas that affect residential neighborhoods to business parks on the City's periphery that are more suitable for those uses and might encourage their success and expansion. The in-city locations may then be redeveloped with more compatible land uses.
- Ensuring that an adequate amount of land is available for each type of office and mixed use business park necessary for community success, and that this

a. Ankeny Budget Storage; b. Hyvee Grocery Store in Ankeny; c. Ankeny Uptown District; d. Retail shops at Ankeny Uptown District;

land lies in an area suitable for its intended use. An early effort in forming these partnerships should be to identify a role for each business park area of the City. Specifically, high-profile corporate headquarters development is appropriate in highly visible locations near Interstate 35 or in Prairie Trail, while general business uses are more appropriate west of the Corporate Woods Drive interchanges. The Land Use Plan in Chapter 5 illustrates these locations by means of various mixed-use designations.

REDEVELOPMENT AREAS

The City should foster redevelopment of older areas that need to be preserved, enhanced or transformed to ensure economic health throughout the entire City.

Specific areas in Ankeny offering prime redevelopment opportunities as outlined in Chapter 5 include:

Uptown Neighborhood

The City should continue to capitalize on the growing mix of retail and restaurant uses in this original business district. The area, when combined with the civic and recreation activities of Hawkeye Park and the High Trestle Trail, has all of the features of a great gathering space for community events and activities. Thoughtful re-use or re-development of vacant City properties and sites with deteriorating structures should include a mix of residential and retail use. Physical improvement to define entrances and provide a sense of place for the Ankeny Boulevard and SW 3rd Street area intersection, the West 1st Street corridor and the West 1st and Cherry Street intersection would help bring a presence to this neighborhood.

Faith Baptist College Neighborhood

This neighborhood, with its mix of education, worship, retail and service businesses, and multi-family and single family uses, has a strong potential for transformation. All of the elements of a vibrant neighborhood center with a mix of uses and housing are present. A detailed study of this area is highly recommended with an outcome to define the catalytic changes that could be made to draw out the best actions and activities for the neighborhood's future.

Ordnance Road Area

Ankeny's first and oldest industrial area is slowly transforming with new construction and new uses that provide valuable services and products to the community. A transition area between the new Prairie Trail project and some of Ankeny's older and well maintained residential neighborhoods, this area is seeking its equilibrium. Connections between West 1st Street and the Prairie Trail project along SW Cherry Street and SW Des Moines Street will expand the opportunities for a new mix of uses and could lead to site redevelopment and updating to meet new standards in the marketplace.

South Ankeny Boulevard Corridor Redevelopment

South Ankeny Boulevard serves as a key corridor in the City. As such, its appearance as a healthy mixed-use corridor is important to the economic vitality of the area as well as the City generally. As mentioned in Chapter 5, new zoning regulations in this area should replace the existing blanket commercial zoning with a new mixed-use urban corridor district, designed to ensure reasonable compatibility among different land uses. This may include a mixture of medium-and high-density residential, neighborhood commercial, and office uses. The aesthetic quality of the corridor could be enhanced with landscaping, themed signage, architectural standards, site design features and innovative storm water management. In addition, underutilized parcels along the corridor may be redeveloped as new commercial and office uses, which can contribute to overall employment growth in the City. The City can use incentives such as tax-increment financing to assist developers engaging in redevelopment projects.

RETAIL DEVELOPMENT

Ankeny should assure appropriate location of retail facilities as growth occurs in the City.

Because substantial population growth is projected in Ankeny and the surrounding area, additional demand will be generated for neighborhood, community, and regional retail development. Thus, the City must assure that this development contributes to the existing character of Ankeny, rather than adversely affecting it. Elements of a strategy include:

Neighborhood Orientation of Retail Facilities. Although it is anticipated that Ankeny will continue to experience development of regional commercial facilities, it is important to allocate land throughout the City for neighborhood commercial development. As discussed in Chapter 5, all new development should occur in the context of neighborhoods with a mix of land uses. Every square mile of new development should include adequate land for neighborhood commercial uses depending upon the characteristics of the neighborhood and the arterial street purpose. Appropriate uses include banks, professional offices, drug stores, convenience stores, restaurants, personal services, and laundries. This type of development should occur in "nodes" located at the intersections of arterial streets and be configured in a pedestrian friendly manner.

Physical Improvements to Major Retail Districts. Streetscape and aesthetic improvements to retail areas can create a unique environment for shopping and can promote the emergence of niche markets that provide regional consumers with unusual experiences. As previously mentioned, Ankeny Boulevard along its entire length represents a prime opportunity for physical enhancements. In addition, the Uptown area offers an opportunity for aesthetic improvements and potential creation of a niche market. Directional graphics and road connections should also be established from major thoroughfares to major retail centers.

Land Use Controls. It is critical that the City maintain land use control over its developing regional commercial areas to avoid uncontrolled strip commercial development that could erode the City's retail base. By means of clustering retail development in nodes rather than strips, inclusion of pedestrian amenities, signage controls, landscaping requirements, and architectural guidelines, the City can ensure top-quality appearance of its commercial areas.

a. b. c. Big Box Retail Stores in Ankeny

CONCLUSIONS

- Ankeny should continue utilizing its resources and work with businesses, developers and builders to ensure a variety of quality business and economic development projects.
- Continue to capitalize on its existing mixed use businesses and office park and add more as demand arise.
- Foster redevelopment of older areas that need to be preserved, enhanced or transformed to ensure vibrant economy throughout the city.
- Assure appropriate location of retail facilities as growth occurs.

11

IMPLEMENTATION

Ankeny should implement the visions and actions presented by the plan through a realistic program that is in step with the resources of the community. This chapter addresses the scheduling of plan implementation by both public agencies and private decision-makers.

INTRODUCTION

The earlier chapters form the core of the Ankeny Comprehensive Plan, with narratives, maps, and statistics concerning desirable future development patterns. Chapter 5, with its focus on land use and its Future Land Use Map, will tend to be the focus of attention as the community moves forward. However, as discussed repeatedly during the update planning process, a comprehensive plan is more than a land use map. The development goals, policies, principles and strategic analysis are all intended to aid and guide the community in key decision-making regarding the future of Ankeny.

Toward these ends, this Implementation chapter has three sections: first, a five- to ten-year strategic growth analysis focused on the key decision regarding where to support short-term growth. As financial limitations force Ankeny, and all communities, to prioritize public infrastructure and facility spending, this is a critical immediate issue. This section includes short term infrastructure improvement needs to support the recommended growth area as well as policies and other actions needed in the short term. Second, this chapter includes a general schedule for implementation of all the other recommendations included in this document. Finally, the third section of this Implementation Chapter focuses on plan maintenance and support to insure regular review of plan implementation and list potential project funding sources.

5-10 YEAR STRATEGIC GROWTH AREA ANALYSIS

Chapter 5 of this Comprehensive Plan Update focuses on Ankeny development within a 25 year planning horizon, out to 2035. There is a need to supplement this long-term look at development with a shorter term five- to ten-year development scenario strategic analysis. While development has occurred in virtually all Ankeny quadrants in recent years, the implications of growth on public service costs and infrastructure varies by geographic growth area. Therefore, it is prudent to evaluate the costs of short-term growth by growth area to determine where public dollars can be invested in infrastructure and services most efficiently.

A day-long staff workshop and Steering Committee meeting were held to investigate this issue. This section is a summary of that exercise.

5-10 YEAR POPULATION GROWTH AND LAND NEEDS

What will Ankeny's population be in five to ten years and how much land area might be developed within that same period? These issues were investigated within the 25 year planning horizon in Chapters One and Two and are here refocused on the shorter time frame.

Figure 11.1 illustrates the recommended population projection of a 3% growth rate, plus the more conservative 2004 Comprehensive Plan projection of 550 dwelling units per year. From this graph, it can be seen that in the relatively short term, there is not substantial variance between the two projections. A 2015 projected population of about 51,000 and a 2020 population of about 59,000 is deemed appropriate for this 5-10 year strategic analysis.

Table 11.1 indicates the land development needs implied by this population growth, applying the same underlying assumptions regarding people per household, etc. used in the Chapter 2 projections. From this table it can be seen that, with the assumed population growth, about 3,000 additional housing units will be needed by 2015 and a total of 7,800 units by 2020. Table 11.2 converts that housing demand into land area.

This table indicates that a total of about three sections (square miles) of land are needed to accommodate the projected housing construction. Standard projection methodology would increase that projected demand to accommodate market choice and provide for flexibility in planning. Here, a doubling of the "hard demand" is illustrated, increasing the land needs to about six sections.

There are, of course, currently vacant "infill" parcels of ground designated for residential development. As these parcels

Figure 11.1: 5-10 Year Population Projection

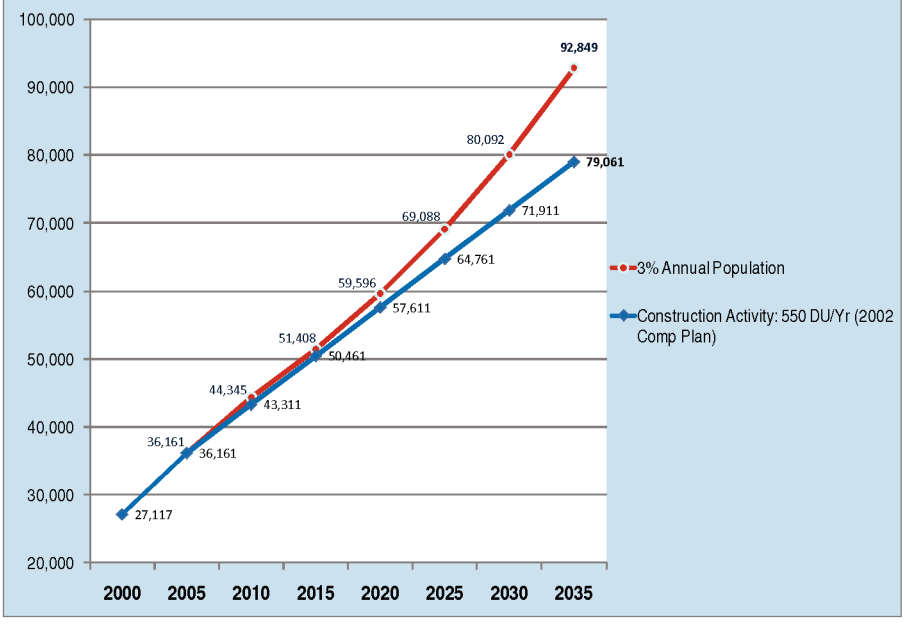


Table 11.1 Projected Housing Development Demand, 2009-2020

	2009	2010	2015	2020	Total
Population at the End of Period	42,708	44,345	51,408	59,596	
Household Population at End of Period	42,383	44,008	51,017	59,143	
Average People/Household	2.60	2.60	2.60	2.60	
Household Demand at End of Period	16,301	16,926	19,622	22747	
Projected Vacancy Rate	8.05%	8.05%	8.05%	8.05%	
Unit Needs at End of Period	17,728	18,408	21,340	24,739	
Replacement Need		20	50	50	
Cumulative Need		**1,379**	**2,982**	**3,449**	**7,810**
Average Annual Construction			**596**	**690**	**710**

Table 11.2 Required Residential Land, 2009-2020

	% of Demand	Units	Gross Density (du/A)	Land Needs	Designated Land (x2)
2009-2015					
Single Family Detached	65%	2835	3	945	
Single Family Attached	20%	872	6	145	
Multi-Family	15%	654	12	55	
Total	**100%**	**4,361**		**1,145**	**2,289**
2015-2025					
Single Family Detached	65%	2242	3	747	
Single Family Attached	20%	690	6	115	
Multi-Family	15%	517	12	43	
Total	**100%**	**3,449**		**905**	**1,811**
Total 2009-2020		**7,810**		**2,050 (3 sections)**	**4,100**

are contiguous with, and often a part of, existing developments, they should logically be the first parcels to develop and should be deducted from the "new growth area" land needed to accommodate the 5-10 year population projection.

Figure 11.2 identifies these existing infill residential development parcels.

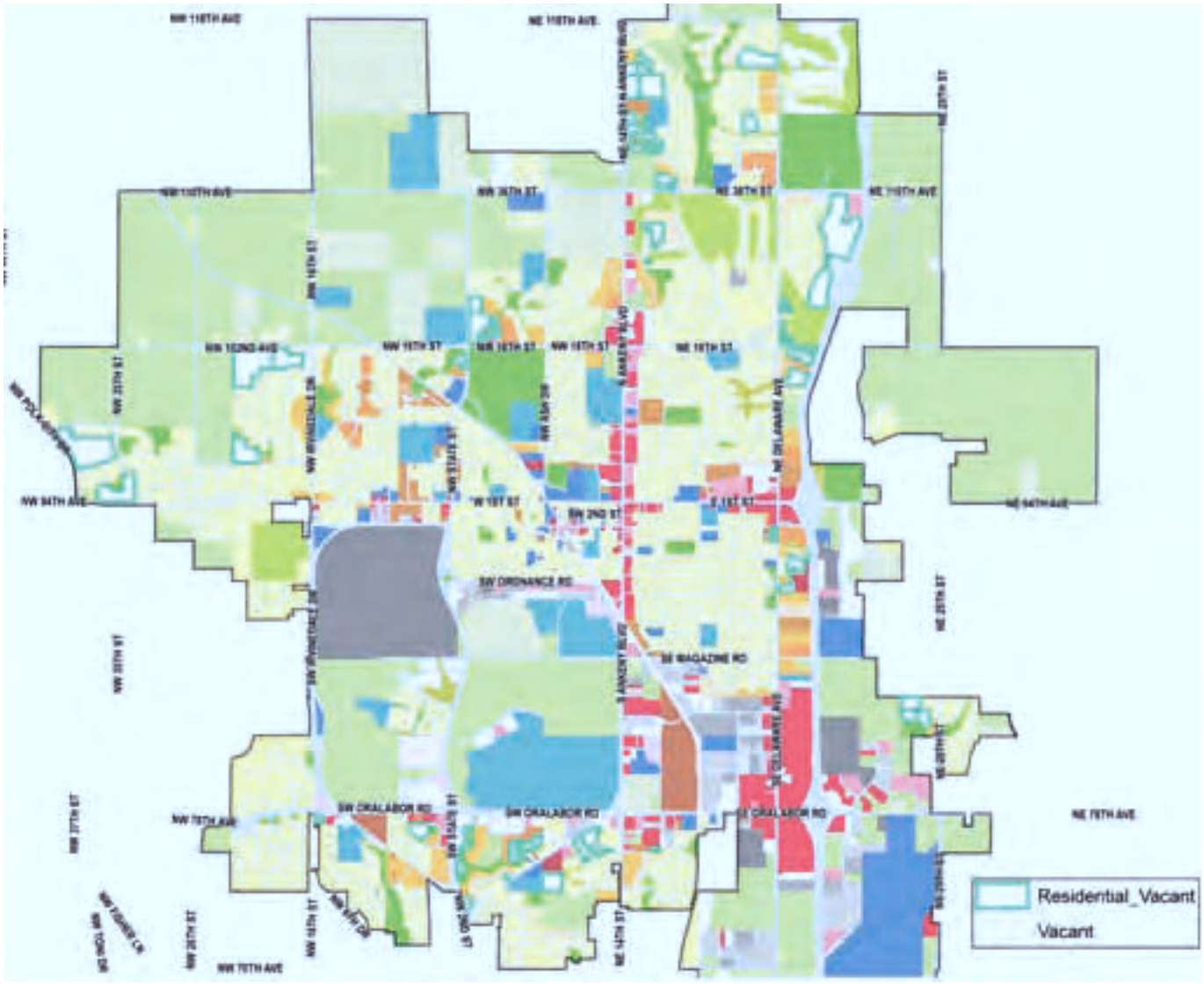
This analysis of vacant residential infill parcels indicates a total of 384 total acres are available for development. This total does not include the Prairie Trail development, which will accommodate a significant component of future housing demand in Ankeny. It is estimated that 337 acres of land will be developed for residential use in the Prairie Trail project within the 5-10 year time frame.

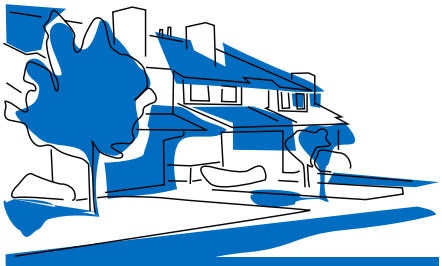
Table 11.3 summarizes the projected residential development land needs for the 5-10 year time frame, taking into account existing infill vacant parcels and Prairie Trail development. This analysis indicates that about one square-mile, or one-third, of the three square mile total land need through the ten-year time frame, from Table 11.2, can be met through infill parcel development and Prairie Trail.

That leaves roughly one square-mile of land needed through 2015, plus another square-mile through 2020. This is the "hard demand" acreage. Doubling that figure is recommended for planning purposes. To summarize:

Time Frame	Land Needed (beyond existing infill parcels and Prairie Trail)
2010-2015	**1-2 Sections**
2015-2020	**2-4 Sections**

Figure 11.2: Vacant Residential Infill Parcels





Roughly 2 acres, i.e. two square-mile of land is needed through 2020. Doubling the figure for planning purposes results in 4 acres of land need by 2020.

Table 11.3: Estimated Residential Land Need, 2009-2020

	Land Needs	Designated Land (x2)
	2,050 acres	
Less:		
Available Infill Development	384 acres	
Prairie Trail	337 acres	
Total Need	**1,329 acres (2 sections)**	**2,658 acres (4 sections)**

ALTERNATIVE GROWTH SCENARIO ANALYSIS

Through this Comprehensive Plan Update, growth areas have been defined by watershed boundaries. These watershed boundaries correlate closely to sanitary sewer and storm water drainage district boundaries, allowing consideration of these critical infrastructure issues. Figure 11.3, Future Growth Areas identifies the Northwest, North, Northeast and Southeast Growth areas. In delineating alternative growth scenarios, the Northeast and Southeast growth areas were combined, resulting in the following growth scenarios:

- **Scenario One**: North Growth Area
- **Scenario Two**: Northwest Growth Area
- **Scenario Three**: Eastern Growth Scenario

During the Strategic Planning Workshop, each of the following issue areas were discussed, relating these issues to the various growth scenarios:

Infrastructure Capacity for 5-10 year growth

- Sanitary Sewer
- Storm Sewer
- Water
- Streets

Public Facility/Service Needs

- Parks
- Schools
- Other

A presentation of these issues was made to the Steering Committee at the conclusion of the Strategic Workshop. Table 11.4 summarizes the issues discussed relative to 5-10 year development in each scenario.

The conclusion of this analysis was that Scenario 1, Northern Growth, represent-

Figure 11.3: **Future Growth Areas**

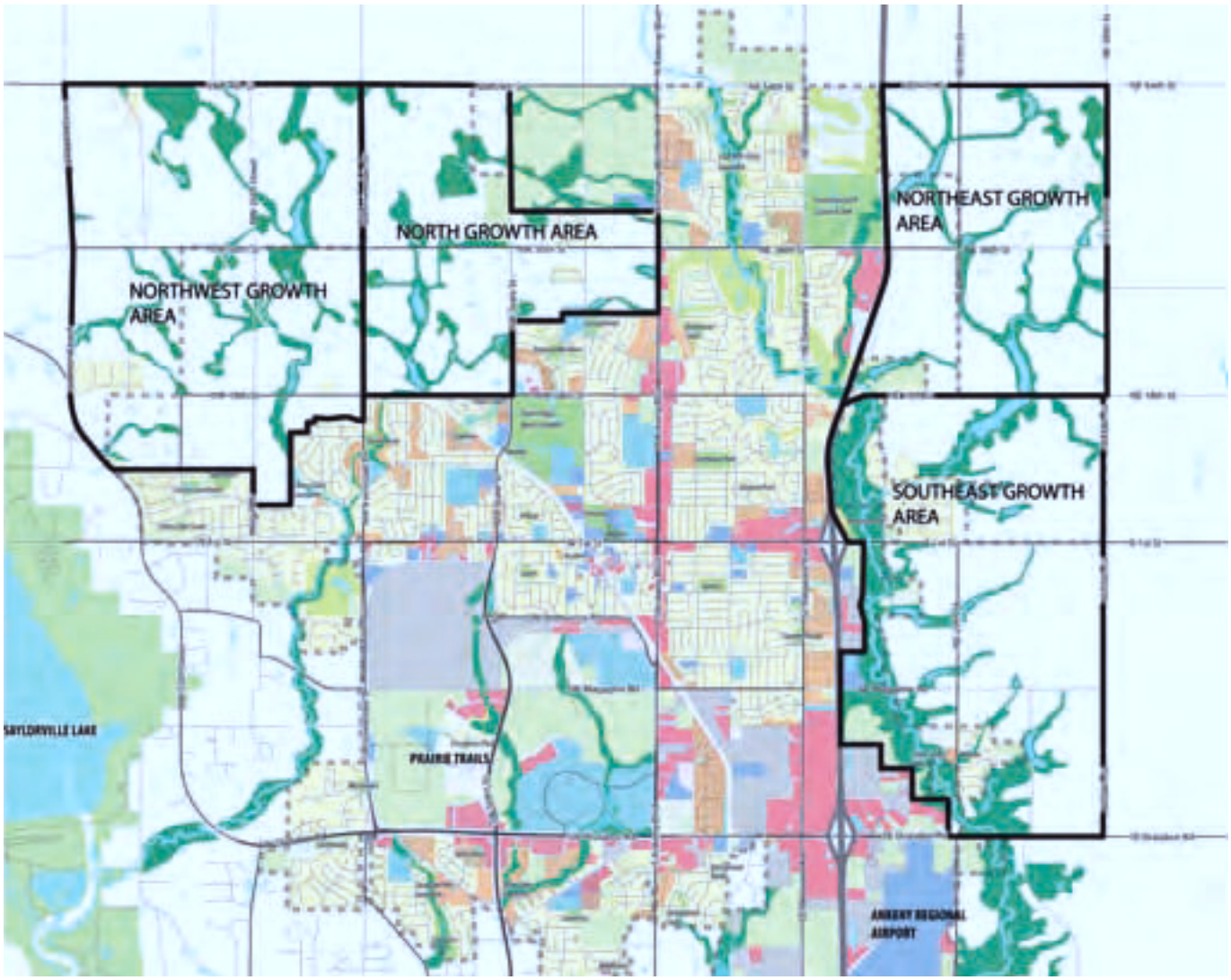


Table 11.4 5-10 Year Growth Scenario Matrix

Criteria	Scenario 1 Northern Growth	Scenario 2 Northwest Growth	Scenario 3 Eastern Growth
Sanitary Sewer	Capacity to serve with typical extensions of trunk sewer lines	In addition to trunk line extensions, sewer capacity improvements are necessary to serve proposed land uses in this area.	Capacity to serve with typical extensions of trunk sewer lines.
Streets	Improve grid of arterial streets	Improve grid of arterial streets; Proposed 36th Street diversion at NW 44th	Improve grid of arterial streets; Requires accelerated connectivity improvements (18th St. Bridge)
Presence of Rural Water	DM WW Rural Water Buyout?	DM WW Rural Water Buyout?	DM WW Rural Water Buyout?
Police/Fire/Ambulance	Extension of existing service areas	Extension of existing service areas	Expansion into new service area. Extended response times?
Water Service	Served by existing water facilities; Need some distribution mains	Need additional storage capacity prior to development; Need distribution mains	Water service extension costs to eastern development area; Grid not developed east of I-35
Contiguity	Positive	Positive	Creates new "East Ankeny" neighborhoods
School District	Positive: growth supported in vicinity of new High School	Positive: growth supported in vicinity of new High School	Negative: encourages growth in areas not served by elementary schools
Parks & Recreation	Neutral: Neighborhood parks developed to serve new growth areas	Positive: supports growth along High Trestle Trail and supports development of new community park to serve NW area	Neighborhood parks and trails developed to serve new growth areas. Creates need for new community park to serve area east of I-35.
Tax Base	Positive: growth to support new community-scale commercial node at State and 36th	Primarily residential tax base	Positive: supports new employment center node at new 36th St. interchange.
Condition of Existing Properties	N/A	N/A	N/A
Contribution to Quality of Development	N/A	N/A	N/A
Property Owners' Support of Annexation	Growth area currently in city limits; Adjacent operating farm issue	Most of growth area currently in city limits; Likely opposition from North Bay subdivision owners	Growth area currently in city limits
Polk County Support of Annexation	N/A	N/A	N/A

ed the most cost-efficient growth direction for Ankeny in the 5-10 year time horizon. Major considerations from Table 11.4 in this recommendation were:

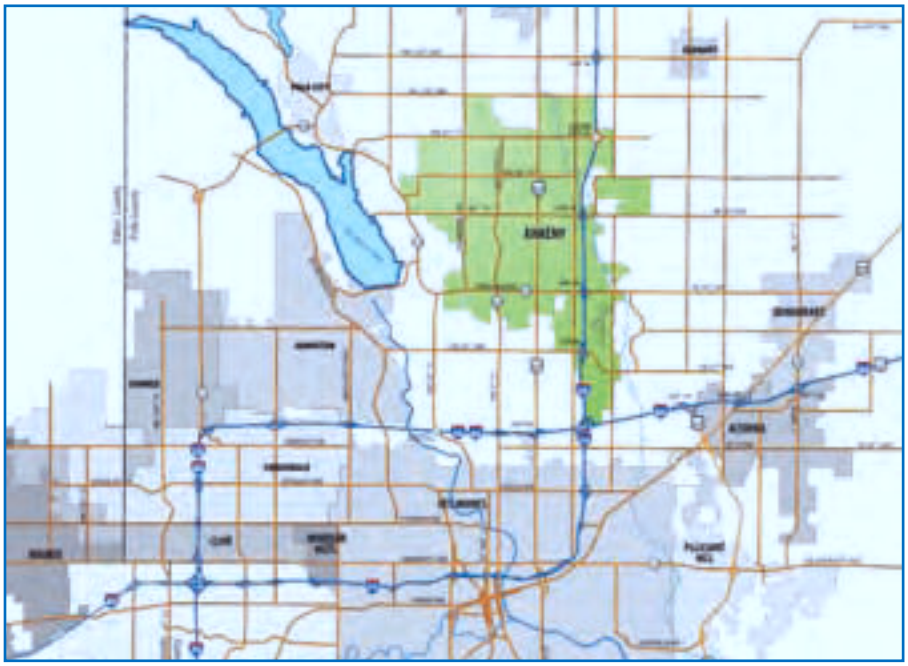
- Northern growth can be served with existing sewer capacity
- Northern growth supports School District investment in the new High School site and builds off existing city infrastructure investments
- Northern growth area currently in city limits
- Northwest growth requires resolution of serious sanitary sewer capacity limitation. Also, requires significant street improvements (negatives).
- Eastern growth speeds up need to make linkage improvements (new bridges at 18th and Magazine). Also, pushes growth in areas not served by current elementary schools and requires significant street improvements (negatives).

This recommendation for short-term emphasis on northern growth does not mean that development cannot occur in the Northwest or Eastern Growth Areas in the 5-10 year time frame. It is simply a recommendation that a northern growth scenario represents the most cost efficient expenditure of limited public funds for infrastructure and public services in the short term.

All development proposals should be considered in light of their short and long term community benefits as well as impact on public infrastructure and service costs. Focus of infrastructure investments in a short-term Northern Growth scenario may mean that development proposals in other growth areas must shoulder a larger component of the infrastructure costs needed to enable that development. Policies to implement these recommendations are included in the following Section.

STRATEGIC SHORT-TERM IMPLEMENTATION PRIORITIES

The 5-10 Year Strategic Growth Area Analysis above recommends that Ankeny give priority for short-term growth, after infilling existing developments, to the "North Growth Area", defined as the area between North Ankeny Boulevard and NW Irvinedale Drive. The following Table 11.5 is a list of priority infrastructure improvements tied to that recommendation for northern growth, as well as needed short term policies and actions identified in various sections of this plan:



ALTERNATIVE GROWTH SCENARIOS

- Scenario One: North Growth Area
- Scenario Two: Northwest Growth Area
- Scenario Three: Eastern Growth Scenario

RECOMMENDED SHORT TERM GROWTH SCENARIO FOR ANKENY

- Northern Growth Scenario represents the most cost-efficient growth direction for Ankeny in the 5-10 year time horizon.
- Northern growth can be served with existing sewer capacity.
- Northern growth supports School District investment in the new High School site and builds off existing city infrastructure investments
- Northern growth area is currently inside city limits.

Table 11.5 Strategic Plan Short Term Implementation Priorities

	Type	Ongoing	Short	Medium	Long
I. INFRASTRUCTURE NEEDS SPECIFIC TO THE NORTHERN GROWTH SCENARIO PRIORITY					
Storm Water					
Develop Improvements throughout the North Creek Bluebelt Corridor.	capital		x	x	
Develop Western Portions of the North Four Mile Creek Bluebelt Corridor.	policy			x	x
Transportation					
Develop NW State Street between NW 18th and NW 36th Streets as a Community Avenue.	capital		x		
Develop NW Irvinedale Drive between NW 18th and NW 36th Streets as a Neighborhood Avenue.	capital		x		
Develop NW 36th Street between N Ankeny Boulevard and NW Irvinedale Drive as a Community Boulevard	capital			x	
Develop NW State Street between NW 36th and NW 54th Streets as a Community Avenue.	capital			x	
Develop NW Irvinedale Drive between NW 36th and NW 54th Streets as a Neighborhood Avenue.	capital			x	
Develop NW 54th Street between N Ankeny Boulevard and NW State Street as a Neighborhood Avenue.	capital				x
Sanitary					
Extend Northern Interceptor to serve majority of properties within Northern Growth area lying north of NW 36th Street.	capital			x	
Extend 12" and 15" Trunk Sewer within North Four Mile Development Basin from NW Ash Drive to serve eastern portions of Northern Growth area lying north of NW 36th Street.	capital			x	
Water					
Complete segment of 12" Water Main along NW State Street between NW 18th and NW 36th Streets.	capital		x		
Complete segment of 12" Water Main along NW Irvinedale Drive between NW 18th and NW 36th Streets as part of street widening project.	capital		x		
Complete segment of 12" Water Main along NW 36th Street as part of street widening project {Transportation Item #3). (Option – complete as loop system with Water Items #1 and #2).	capital			x	
Extend 12" Water Main from intersection of NW State and NW 36th Streets to existing 12" Water Main along NW 54th Street.	capital			x	
Complete loop of 12" Water Main system from intersection of NW 36th Street and NW Irvinedale Drive to end of existing 12" Water Main along NW 54th Street.	capital			x	

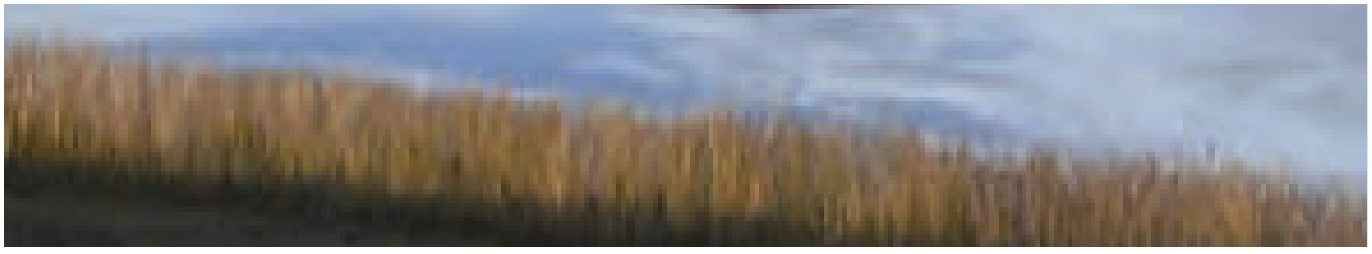


Table 11.5 Strategic Plan Short Term Implementation Priorities Continued.

	Type	Ongoing	Short	Medium	Long
II. OTHER SHORT-TERM POLICIES AND ACTIONS					
Chapter 3: Community Visions, Goals and Principles					
Review zoning and subdivision ordinances and, if needed, prepare revisions to encourage mixed-use development plans that combine single-family and higher density development. Require large tracts of land under single ownership to be "master planned" as a neighborhood.	policy		x		
Review the minimum quality standards, design guidelines, and landscaping requirements contained in the City's zoning ordinance to ensure that minimum standards are appropriate.	policy		x		
Review zoning and subdivision regulations to ensure that standards allow for diversity of housing types and affordability.	policy		x		
Adopt civic and neighborhood parkway design standards to incorporate enhanced landscaping and pedestrian amenities.	policy		x		
Add design guidelines to commercial zoning regulations.	policy		x		
Review zoning and subdivision regulations to insure consistency with Smart Growth Principles.	policy		x		
Chapter 4: Environmental and Stormwater Considerations					
Review existing ordinances and create new ordinances as necessary to govern stream buffers and sensitive areas.	policy		x		
Study Northern Growth Area Bluebelt Corridors to develop a more detailed concept plan.	policy		x		
Chapter 5: Community Growth and Land Use					
Initiate a revitalization planning process for the Uptown area.	policy		x		
Initiate a revitalization planning process for South Ankeny Boulevard.	policy		x		
Initiate a revitalization planning process for the Ordnance Road corridor	policy		x		
Initiate a revitalization planning process for the Faith Baptist College neighborhood	policy		x		
Chapter 6: Parks and Trails					
Provide new park and open space areas indicated in areas indicated by the Future Parks and Trails Map in Chapter 6. These include new community parks, neighborhood parks, and bluebelts.	policy/capital		x		
Chapter 7: Transportation					
Development of the NE 36th Street corridor as a context sensitive arterial connection between Polk City and Interstate 35.	policy		x		
Plan and construct overpasses along Interstate 35 at SE Magazine, NE 18th Street and NE 54th Street as growth continues east of the interstate.	capital		x		
Chapter 10: Economic Development					
Analyze all of Ankeny's regional commercial areas and budiness parks to determine their competitive status relative to all other similar development locations in metro Des Moines. Focus efforts on distinguishing Ankeny's locations from the many competing locations.	action		x		

IMPLEMENTATION SCHEDULE

This section addresses the scheduling of plan implementation by both public agencies and private decision-makers.

Ankeny should implement the visions and actions presented by the Plan through a realistic program that is in step with the resources of the community.

The following Implementation Schedule Table 11.6 presents a concise summary of the recommendations of the Ankeny Plan. Items with asterisk are those that have been included as short term strategies in Section I.

These recommendations include three types of efforts:

Policies

Policies indicate continuing efforts over a prolonged period to implement the elements of the Plan. In some cases, policies include specific regulatory or administrative actions.

Action Items

Action Items include specific efforts or accomplishments by the community.

Capital Investments

Capital Investments include public capital projects that will implement features of the Ankeny Plan.

Each recommendation is listed as part of its section in the Plan. In addition, a time frame for implementing recommendations is indicated. Some recommendations require ongoing implementation. Short-term recommendations should be implemented within five years, medium-term within five to ten years, and long-term within ten to twenty years.

IMPLEMENTATION

- Policies indicate continuing efforts over a long period of time to implement the elements of the Comprehensive Plan.
- Action Items include specific efforts or accomplishments by the community.
- Capital Investments include public capital projects that will implement features of the Plan.

Table 11.6 Implementation Schedule

	Type	Ongoing	Short	Medium	Long
CHAPTER 3: COMMUNITY VISIONS, GOALS AND PRINCIPLES					
STRATEGIC PLAN 2022					
Continue to implement the Ankeny 2022 Strategic Plan	policy/ action	x			
ANKENY COMPREHENSIVE PLAN 2004 GOALS					
Continue implementation of the 2004 Ankeny Comprehensive Plan Goals and Vision	policy/ action	x			
COMMUNITY GOALS					
Ensure that growth occurs within the context of new "neighborhoods," and not separate, disconnected developments.					
Base development decisions on the Land Use Plan contained in Chapter 5.	policy	x			
Encourage mixed-use development plans that combine single-family and higher density development. Require large tracts of land under single ownership to be "master planned" as a neighborhood.	policy	x	x		
Ensure that new development areas incorporate the future streets plan identified in Chapter 7. New neighborhoods should be organized around a traditional street pattern.	policy	x			
Ensure that new development areas incorporate the parks and trails plan presented in Chapter 6.	policy	x			
Provide infrastructure investments that correspond to the community's growth potential.					
Ensure that new development is focused in the areas designated by the growth phasing strategy and land use plan in Chapter 5.	policy	x			
Ensure that new development is contiguous to existing areas of development.	policy	x			
Plan timing of infrastructure investments to coordinate with development needs and focus investments in the Tier I and Tier II development areas discussed in Chapter 5.	capital	x			
The City should ensure that new development is marked by attractive design and contributes to the community's character.					
Review the minimum quality standards, design guidelines, and landscaping requirements contained in the City's zoning ordinance to ensure that minimum standards are appropriate.	action		x		
Ensure that development within Ankeny and on Ankeny's periphery demonstrates environmental responsibility and adheres to the City's long-term growth goals.					
Utilize floodplain, wetlands, contour, and tree cover maps in review of development. Ensure that critical areas are accommodated in development plans.	policy	x			
Ensure that new development is contiguous to existing areas of development.	policy	x			
Maintain the unique, separate character of the City, while acknowledging Ankeny's increasingly important role as a member of the metropolitan Des Moines community.					

Table 11.6 **Implementation Schedule Continued.**

	Type	Ongoing	Short	Medium	Long
Collaborate with neighboring jurisdictions on issues such as land use, transportation, and economic development and consider regional impacts of new development.	policy	x			
Develop unique gateway corridor signage to create Ankeny's image.	action		x		
Maintain variety in the City's housing stock, with dwelling units affordable to a variety of income levels and age groups, particularly elderly residents.					
Encourage housing affordable to households of a variety of income levels, integrating different housing types into the community.	policy	x			
Review zoning and subdivision regulations to ensure that standards allow for diversity of housing types and affordability	policy		x		
Provide additional opportunities for commercial, industrial, and small business growth and ensure appropriate location in accordance with the City's overall land use and transportation plan.					
Ensure that new commercial and industrial development occurs in the areas identified by the Future Land Use Map presented in Chapter 5.	policy	x			
Encourage the development of an interconnected system of parks, trails, and civic parkways and maintain a high level of service for recreational facilities as new neighborhoods emerge.					
Ensure that new development areas incorporate the parks and trails plan presented in Chapter 6.	policy	x			
Develop an annual trail construction CIP program.	action		x		
Adopt civic and neighborhood parkway design standards to incorporate enhanced landscaping and pedestrian amenities.	policy		x		
Promote the emergence of Ankeny as a major employment center within the Des Moines metropolitan area by stimulating growth in office, industrial, and business park development					
Allocate land for a variety of industrial and business park uses and maintain high standards for the appearance of development.	policy	x			
Strengthen Ankeny's traditional City Center and civic campus as the focus of the community.					
Give public improvements that enhance the City Center high priority and adopt the redevelopment concept for the Uptown area discussed in Chapter 5.	policy/ action		x		
Develop street and trail linkages to connect major community features.	capital		x	x	
Add design guidelines to commercial zoning regulations.	policy		x		
Consider incentives such as TIF and tax abatement to encourage redevelopment of obsolete land uses with commercial and high-density residential uses.	policy		x		

Table 11.6 **Implementation Schedule Continued.**

	Type	Ongoing	Short	Medium	Long
SMART GROWTH PRINCIPLES					
Encourage Distinctive Communities with a Sense of Place					
Add design guidelines to commercial zoning district regulations.	policy		x		
Review zoning ordinance to ensure that minimum quality standards for new development produce attractive structures that complement existing development.	action		x		
Develop landscape and signage features along key corridors, including street trees.	capital		x		
Preserve Open Space and Vital Environmental Areas					
Utilize floodplain, wetlands, contour, and tree cover maps in review of development. Ensure that critical areas are accommodated in development plans.	policy	x			
Mix Land Uses					
Review zoning ordinance to ensure that current requirements do not work against this goal.	action		x		
Encourage use of Planned Unit Development zoning to achieve design flexibility in developing mixed-use plans.	policy		x		
Encourage Human-Scaled Design in Major Activity Centers					
Review zoning ordinance to ensure that current requirements do not work against this goal.	policy		x		
Add design guidelines to commercial zoning district regulations.	policy		x		
Increase required pedestrian amenities in commercial centers.	policy		x		
Create Housing Opportunities and Choices					
Encourage housing affordable to households of a variety of income levels, integrating different housing types into the community.	policy	x			
Review zoning and subdivision regulations to ensure that standards allow for diversity of housing types and affordability	policy		x		
Consider multi-use buildings that integrate housing into commercial environments.	policy	x			
Create Transportation Options					
Implement Trails Plan presented in Chapter 6.	capital	x			
Require sidewalks on both sides of all streets in developing areas and fill in gaps in the existing sidewalk network.	policy/ capital	x			
Ensure that new development areas incorporate the future streets plan identified in Chapter 7. New neighborhoods should be interconnected and organized around a traditional street pattern.	policy	x			
Make Full and Efficient Use of Urban Services					
Ensure that development occurs in a manner contiguous to existing development.	policy	x			
Encourage compact development patterns.	policy	x			
Provide infrastructure extensions as identified in Chapter 8.	policy/ capital	x			

Table 11.6 **Implementation Schedule Continued.**

	Type	Ongoing	Short	Medium	Long
Achieve Stakeholder Collaboration in Development Decisions and Provide Tools that Encourage the Emergence of a Smart Community.					
Adopt land development guidelines that promote smart growth.	policy		x		
Establish a process that encourages collaboration between stakeholders and the community.	policy		x		
Institute development review processes that encourage, rather than obstruct, innovative types of development.	action		x		
Promote Regional Cooperation					
Consider the long-range goals of neighboring jurisdictions when making development decisions.	policy	x			
Examine impacts of new development on regional facilities.	action	x			
Consider collaboration on regional issues where beneficial to the region and the City.	policy	x			

	Type	Ongoing	Short	Medium	Long
CHAPTER 4: ENVIRONMENTAL AND STORMWATER CONSIDERATIONS					
STORMWATER MANAGEMENT (See Chapter 4 for more details)					
Implement use of the Iowa Stormwater Management Manual as requirements for design calculations.	policy		x		
Review existing ordinances for items that conflict with concepts discusses in Chapter 4.	policy		x		
As financially viable, correct identified major storm water related issues.	capital		x	x	
Create new ordinances as necessary (to govern stream buffers and sensitive areas).	policy		x		
In developing areas, reserve the anticipated 500-year flood plain as open space along significant stream corridors.	action	x			
Manage the growth of trees and brush along major stream corridors.	action	x			
Develop a routine maintenance program for City rainwater management facilities.	action	x			
Study individual Bluebelt corridors to develop a more detailed concept plan for each.	action	x			

	Type	Ongoing	Short	Medium	Long
CHAPTER 5: COMMUNITY GROWTH AND LAND USE					
DEVELOPMENT PRINCIPLES					
Stormwater Management Plan					
Ensure that development occurs in accordance with the storm-water management plan presented in Chapter 4.	policy	x			
Ankeny's Regional Role/Influences					
Continue to monitor and participate in regional decision-making regarding the various regional issues identified.	policy	x			

Table 11.6 **Implementation Schedule Continued.**

	Type	Ongoing	Short	Medium	Long
Neighborhood Model					
Adopt neighborhood model as a guide for development in growth areas.	policy	x			
Ensure that new residential development in Ankeny occur within the context of new neighborhoods, rather than disconnected, piecemeal housing tracts.	policy	x			
Ensure that land use policy provides flexibility that allows the emergence of mixed-use urban neighborhoods.	policy	x			
Maintain a connected street network, providing options for movement around the city and providing transportation alternatives.	policy	x			
Ensure that variety of housing options are offered within each neighborhood.	policy	x			
COMMUNITY GROWTH AND LAND USE (See Chapter 5 for more details)					
Land Use Concept					
Ensure that development occurs in potential growth areas presented in Chapter 5.	policy	x			
Preservation of Natural Areas/Bluebelts					
Protect and enhance significant stream corridors or "bluebelts" in developing areas.	policy/action	x			
Recognize natural areas and open space as long term community amenities and emphasize protecting such areas.	policy/action	x			
Residential Mix					
Ensure that residential growth follows the "neighborhood model" design principle presented in Chapter 5.	policy	x			
Ensure that new residential development is focused on those areas designated by the Future Land Use Plan.	policy/action	x			
Ensure that variety of housing options is available to residents.	action	x			
Commercial/Mixed Use Nodes					
Ensure that new commercial development is located within well-defined nodes or districts, each with a unique and complementary role and following the designations presented on the Future Land Use Map.	policy	x			
Ensure that such commercial centers are well designed with a mixture of different activities and land uses in a pedestrian oriented environment accessible to bicycles, pedestrians and transit users, in addition to automobiles.	policy/action	x	x		
Provide opportunities for redevelopment of older commercial corridors located within the built area of the City.	action	x	x		
Business Parks/Industrial Districts					
Provide attractive sites for future industrial and business park development, acknowledging that different areas serve different roles.	policy	x			

Table 11.6 Implementation Schedule Continued.

	Type	Ongoing	Short	Medium	Long
FRAMEWORK FOR DECISION MAKING					
Utilize the Future Land Use Map and Land Use Compatibility Matrix presented in Chapter 5 in order to make flexible, yet sustainable land use decisions.	policy	x			
REVITALIZATION AREAS					
Ankeny Uptown District					
Consider Uptown District as a "Preserve and Enhance" neighborhood and implement a revitalization strategy as suggested in Chapter 5 (Figure 5.24).	policy/action	x	x		
Review Ankeny's zoning ordinance and site plan review regulations to insure they are working to support the Uptown District's historical development character.	action	x			
Extend the High Trestle Trail through the Uptown District	capital		x		
Identify and review key business district entrance locations for way-finding signage.	action/capital		x		
Cherry Street Link to Prairie Trail					
Enhance and Improve Cherry street corridor as a "complete street" as recommended in Chapter 6.	capital		x		
Ordnance Road					
Inventory existing property uses and conditions to develop a revitalization program for the area.	action		x		
South Ankeny Boulevard: North of Ordnance Road					
Designate South Ankeny Boulevard north of Ordnance Road for a specific revitalization plan.	action		x		
South Ankeny Boulevard: South of Ordnance Road					
Develop a commercial/office/apartment mixed use development master-plan including a 5-7 acre neighborhood park for this area.	action/capital		x		
Faith Baptist College Neighborhood					
Develop a neighborhood plan for this area as recommended in Chapter 5.	action		x		

Table 11.6 **Implementation Schedule Continued.**

	Type	Ongoing	Short	Medium	Long
CHAPTER 6: PARKS AND TRAILS					
Greenways/Bluebelts					
Conserve bluebelt corridors as an extensive open space network system and where possible combine such bluebelts with future parks to create large recreation areas.	policy/action	x			
New Parks					
Provide new park and open space areas indicated in areas indicated by the Future Parks and Trails Map in Chapter 6. These include new community parks, neighborhood parks, and bluebelts.	policy/capital	x	x		
Where possible, utilize oppotunities for co-location of park facilities with other public uses, especially schools.	capital	x	x		
New Trails					
Provide a network of trails, connecting existing and future development areas, recreation facilities, and other major community features. These trails should serve both transportation and recreational purposes. They should create loops that provide for maximum accessibility and flexibility in trip length.	policy/capital	x			
Improvements/Expansion of Existing Park Facilities					
Implement a regularly budgeted, incremental program of park site improvements and upgrades at existing parks.	capital	x			
Neighborhood Park Financing					
Devise an equitable mechanism to finance community park acquisition in order to ensure the reservation of well-located and appropriately sized open spaces.	action		x		
	Type	**Ongoing**	**Short**	**Medium**	**Long**
CHAPTER 7: TRANSPORTATION					
Long Term Transportation Improvements (See Chap 7. For details)					
Development of the NE 36th Street corridor as a context sensitive arterial connection between Polk City and Interstate 35.	capital		x	x	
Continue to expand the existing system of trails.	capital	x			
Plan and construct overpasses along Interstate 35 at SE Magazine, NE 18th Street and NE 54th Street as growth continues east of the interstate.	capital		x	x	
Extend arterial corridors into developing areas, with each corridor having a specific role within the system and guided by concepts of context sensitive design.	action	x			
Review possible connections to the Northeastern Beltway as more specific information is developed about alignment and construction schedules.	action	x			
Accommodate creation of the North-South connector corridor as part of a regional transportation effort.	action	x			

Table 11.6 **Implementation Schedule Continued.**

	Type	Ongoing	Short	Medium	Long
CHAPTER 8: INFRASTRUCTURE					
Water System					
Continue negotiating for source water capacity from the Des Moines Water Works (DMWW) as dictated by development in accordance with the recommendations of the Water System Facility Plan.	action	x			
Construct additional storage and ASR facilities as dictated by development in accordance with the recommendations of the Water System Facility Plan.	capital				x
Continue constructing water main loops with 12" mains on a one-mile grid with supplemental 10" mains on a half-mile grid as dictated by development.	capital	x			
Construct improvements to the existing system outlined in the chapter when necessary or when determined economically feasible.	capital	x			
Minimize connections between the two different pressure zones in the City.	action	x			
Construct a feeder main and possible booster station to supply water to the second pressure zone when required in the future in accordance with the recommendations of the Water System Facility Plan.	capital				x
Sanitary Sewer System					
Construct improvements to the existing system outlined in this chapter when necessary or when determined economically feasible.	capital	x			
Provide sanitary sewer service to the Golf View Acres area when feasible after the Rock Creek Trunk Sewer Segments 1, 2 & 3 are completed.	capital		x		
Perform an analysis for the major trunk sewers in the City to determine capacity downstream of the proposed development areas in this plan.	action		x		
Continue monitoring the West Outfall and Saylor Creek lift station as development progresses in Prairie Trail.	action	x			
Conduct a Sanitary Sewer study for the Rock Creek Basin including more detailed layout of future trunk sewers. This study should also include investigation of how to serve the far western portions of the basin which cannot be served by gravity sewer from the existing system.	action		x		
Extend trunk sewers into service basins as development progresses.	capital	x			

Table 11.6 Implementation Schedule Continued.

	Type	Ongoing	Short	Medium	Long
CHAPTER 9: PUBLIC FACILITIES					
Develop methods for benchmarking public facilities and services so that proper planning can be undertaken to provide public facilities and services to maintain the high level of customer service expected by the residents and businesses of Ankeny.	action		x		
	Type	**Ongoing**	**Short**	**Medium**	**Long**
CHAPTER 10: ECONOMIC DEVELOPMENT					
Analyze all of Ankeny's regional commercial areas and budiness parks to determine their competitive status relative to all other similar development locations in metro Des Moines. Focus efforts on distinguishing Ankeny's locations from the many competing locations.	action		x		

PLAN MAINTENANCE AND SUPPORT

PLAN MAINTENANCE

Because the scope of the Ankeny Plan is both ambitious and long-range, its recommendations may appear daunting. Thus, the City should implement an ongoing planning process that uses the Plan to develop year-by-year improvement programs. In addition, this process should evaluate the plan on an annual basis in consideration of the development events of that particular year.

Such a process should include the following features:

Annual Action and Capital Improvement Program.

A key feature of this process is an annual action and capital improvement program. In such a program, the Planning and Zoning Commission and City Council use the Plan to define annual strategic work programs of policies, actions, and capital investments. This program should be coordinated with Ankeny's existing capital improvement planning and budgeting process, even though many of the Plan's recommendations are not capital items. This annual process should be completed before the beginning of each budget year and should include:

- A specific work program for the upcoming year. This program should be specific and related to the City's financial resources. The work program will establish the specific plan recommendations that the City will accomplish during that year.
- A three year strategic program. This component provides for a multi-year perspective, aiding the preparation of the annual work program. It provides a middle-term implementation plan for the City.
- A six year capital improvement program. This is merged into Ankeny's current capital improvement program.

Annual Evaluation

In addition, this process should include an annual evaluation of the Comprehensive Plan. This evaluation should occur at the end of each calendar year. Desirably, this evaluation should include a written report that:

- Summarizes key land use developments and decisions during the past year and related them to the Comprehensive Plan.
- Review actions taken by the City during the past year to implement Plan recommendations.
- Defines any changes that should be made in the Comprehensive Plan.

The Plan should be viewed as a dynamic changing document that is used actively by the City.

PLAN SUPPORT

In order to implement many of the objectives described in the Plan, the City will need to consider outside funding sources.

Table 11.7 on the following pages present possible funding sources available to the City of Ankeny for various projects recommended in the Comprehensive Plan.

This should not be viewed as a complete list, but rather one that should be reviewed and modified each fiscal year.

Table 11.7 Potential Funding Sources

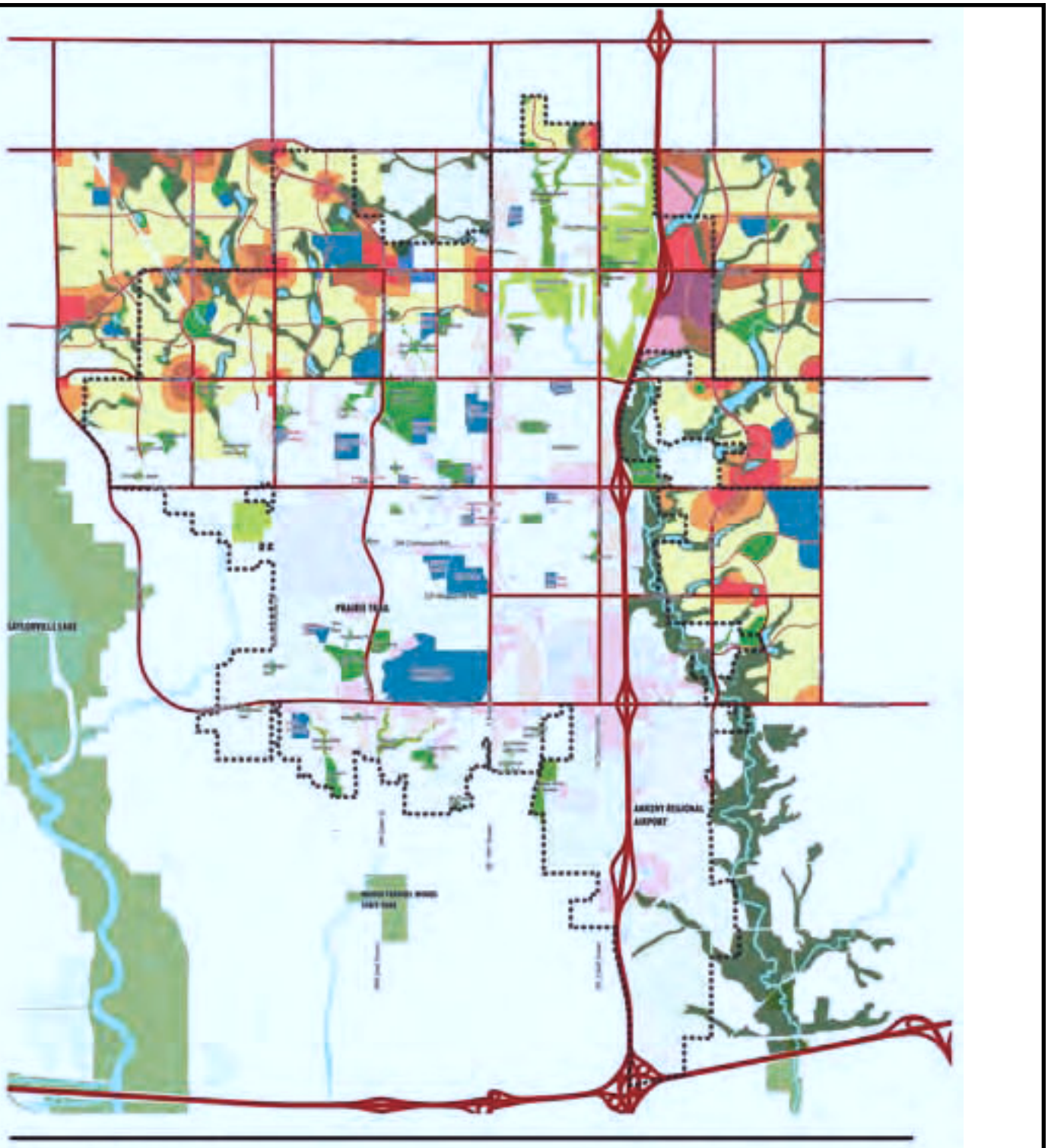
SOURCE	FUND ADMINISTRATOR	DESCRIPTION	POSSIBLE USES	DEADLINES	AVAILABLE FUNDS	REQUIRED MATCH
Community Attraction and Tourism Program	Vision Iowa, Iowa DED	Funding for the development and creation of multiple purpose attraction or tourism facilities.	Creation of a major recreation facility in the city.	NA	TBD	Encouraged
Community Development Block Grant (CDBG)	HUD/State of Iowa	Federal funding for housing and economic development to benefit low-and moderate income residents.	Rehabilitation and infill projects, directed to projects that benefit low-and-moderate-income households or eliminate blighted areas.	NA	NA	NA
DOT/DNR Fund	Iowa DOT	State funds for roadside beautification of primary system corridors with plant materials.	Landscaping improvements along key corridors in the city.	Open	$300,000	Encouraged
Federal Transportation Enhancement Program	Iowa DOT or RPA/ MPO	Funding for enhancement or preservation activities of transportation related projects.	Projects must fit at least one of the following: facilities for pedestrians and bicyclists; acquisition of scenic or historic sites; scenic beautification; historic preservation; rehabilitation and operation of historic transportation facilities; preservation of abandoned railway corridors; control and removal or outdoor advertising; archaeological planning and research; mitigation of water pollution due to highway runoff; safety and educational activities for pedestrians and bicyclists; historical displays at tourist and welcome centers; or transportation museums.	1-Oct	$4,500,000 each for statewide and regional projects	30%
Federal Recreation Trails Program	Iowa DOT	Provides funding for motorized and non-motorized recreational trails and trail related projects.	Local, regional or statewide trails plans.	1-Oct	$1,000,000	20%
Highway Bridge Replacement and Rehabilitation Program	Iowa DOT	Funds for replacement or rehabilitation of structurally deficient or functionally obsolete public roadway bridges.	Bridge rehabilitation or replacement	1-Oct	$ 1 Million per bridge	20%
HOME	IDED	Funds administered by the State to provide leverage financing for new or rehabilitated rental development.	New and rehabilitated rental projects. HOME funds may be used in conjunction with Section 42 Low Income Housing Tax Credits. They may also be used for innovative project approaches, such as rent-to-own development.	NA	NA	NA
Iowa Clean Air Attainment	Iowa DOT	Funding for highway-street, transit, bicycle/pedestrian or freight projects or programs which help maintain Iowa's clean air quality by reducing transportation related emissions.	Upgrades to arterial and major collector streets.	1-Oct	TBD	20%

Table 11.7 Potential Funding Sources Continued

SOURCE	FUND ADMINISTRATOR	DESCRIPTION	POSSIBLE USES	DEADLINES	AVAILABLE FUNDS	REQUIRED MATCH
Land and Water Conservation Fund	Iowa DNR	Funding for park and trail improvements and land acquisition.	Improvements to existing recreation facilities and development of new facilities.	15-Mar	TBD	50%
Living Roadway Trust Fund	Iowa DOT	State funds to implement integrated Roadside Vegetation Management programs (IRVM) on city, county, or state rights-of-way or areas adjacent to traveled roads.	Roadside inventories, gateways, education, research, roadside enhancement, seed propagation, and special equipment.	31-Aug	TBD	NA
Pedestrian Curb Ramp Construction	Iowa DOT	To assist cities in complying with the Americans with Disabilities Action primary roads.	Construct curb ramps to ADA standards.	Accepted all year	$250,000 per city per year	45%
Public Facilities Set-Aside Program (PFSA)	IDED	Financial assistance to cities and counties to provide infrastructure improvements for businesses which require such improvements in order to create new job opportunities.	Provision or improvement to sanitary sewer systems, water systems, streets, storm sewers, rail lines, and airports. For Iowa Cities under 50,000 populations, CDBG benefit requirements.	NA	NA	50%
Resource Enhancement and Protection (REAP)	Iowa DNR	Available for projects that enhance and protect natural and cultural resources.	Available for parkland expansion, multi-purpose recreation developments, soil and water conservation, DNR acquisition, and DNR land management.	Applications not currently being accepted	$125,000	NA
Revitalization Assistance for Community Improvement (RACI)	IDED	Funding for various economic and community development projects.	Neighborhood revitalization, historic preservation, upper story restoration of downtown buildings.	7-Nov	$15,000	Encouraged
Revitalize Iowa's Sound Economy (RISE)	Iowa DOT	DOT administered funds used to promote economic development through construction or improvement or roads and streets.	Construction or improvement of roadways that will facilitate job creation or retention. Potential uses include a street system for additional business or industrial development.	2/1 and 9/1	$30,000,000	20/50%
Safe Route to Schools	Iowa DOT	Competitive grant program for infrastructure improvements within a 2 miles radius of K-8 Schools.	Sidewalk installation and improvements, and downtown pedestrian safety improvements.	1-Oct	$1,000,000	NA
Section 42 Low Income Housing Tax Credit	HUD	The allocation of tax credits to affordable housing developers through the State. Developments can utilize either a 4% or 9% credit, depending on the mix of low-income residents.	Multi-family housing development for low and moderate-income families.	NA	NA	NA
Self-Supported Business Improvement District	Business Association	Contributions by business owners used for various business district enhancements.	Physical improvements to business district, upper-story restoration of downtown buildings.	NA	NA	NA

Table 11.7 Potential Funding Sources

SOURCE	FUND ADMINISTRATOR	DESCRIPTION	POSSIBLE USES	DEADLINES	AVAILABLE FUNDS	REQUIRED MATCH
State Recreational Trails Program	Iowa DOT	Provides funding for public recreational trails.	Local, regional or statewide trails plans.	1/2 and 7/1	$2,000,000	25%
Surface Transportation Program (STP)	Regional Planning Affiliation or Metropolitan Planning Organization (RPA/MPO)	Funding for road or bridge projects on the federal aid system.	Road or bridge projects. Trails improvements. Bicycle facilities.	Vary by RPA/MPO	$43,000,000 for all RPA/MPO's	20%
Tax Abatement	City	Reduction or elimination of property taxes for set period of time on new improvements to property granted as an incentive to do such projects.	Available for commercial, industrial, or residential developments.	NA	NA	NA
Tax Increment Financing (TIF)	City	Used added property tax revenues created by growth and development to finance improvements within the boundaries of a redevelopment district.	New residential, commercial, or industrial developments, including public improvement, land acquisition, and some development costs.	NA	NA	NA
Traffic Safety Improvement Program (TSIP)	Iowa DOT	Traffic safety improvements or studies on any public road.	Traffic safety and operations at specific site with an accident history. New traffic control devices. Research, studies or public information initiatives.	15-Aug	$500,000 per project	NA
Transportation and Community and System Preservation Program	Iowa DOT	Funding for planning and implementing strategies that improve the efficiency of the transportation system, reduce the environmental impacts of transportation, reduce the need for costly future public infrastructure investments, ensure efficient access to jobs, services and centers of trade, and examine private sector development patterns and investments that support these goals.	Innovative transportation improvements that address stated goals.	Established yearly	$61,250,000	NA
Transportation Equity Act (SAFETEA-LU)	Federal Highway Administration through RPA/MPO's	Federal transportation funding, including matching grants for major street improvements, enhancements funding for corridor design, streetscape, trail development, and transit.	Improvements to arterial and major collector streets and trail development.	NA	NA	NA
Trees Forever	Trees Forever	Funds for roadside vegetation	Landscaping improvements along key corridors in the city.	TBD	TBD	Encouraged
Urban-State Traffic Engineering Program (U-STEP)	Iowa DOT	Improvements involving a municipal extension of a primary road.	City must engineer and administer project. Spot improvements or linear improvements.	Accepted all year	$200,000 for spot improvements $4,000,000 for linear improvements	

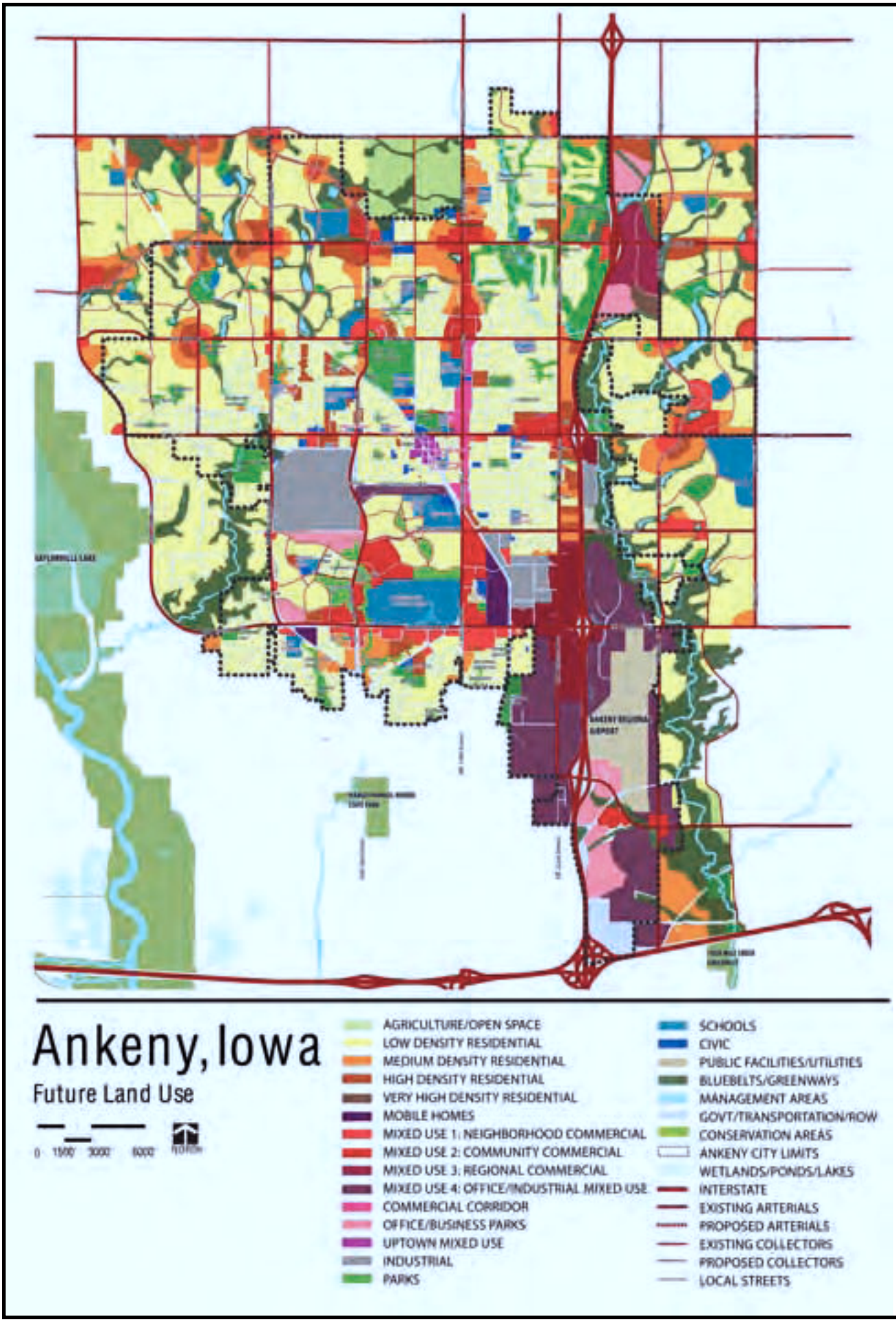


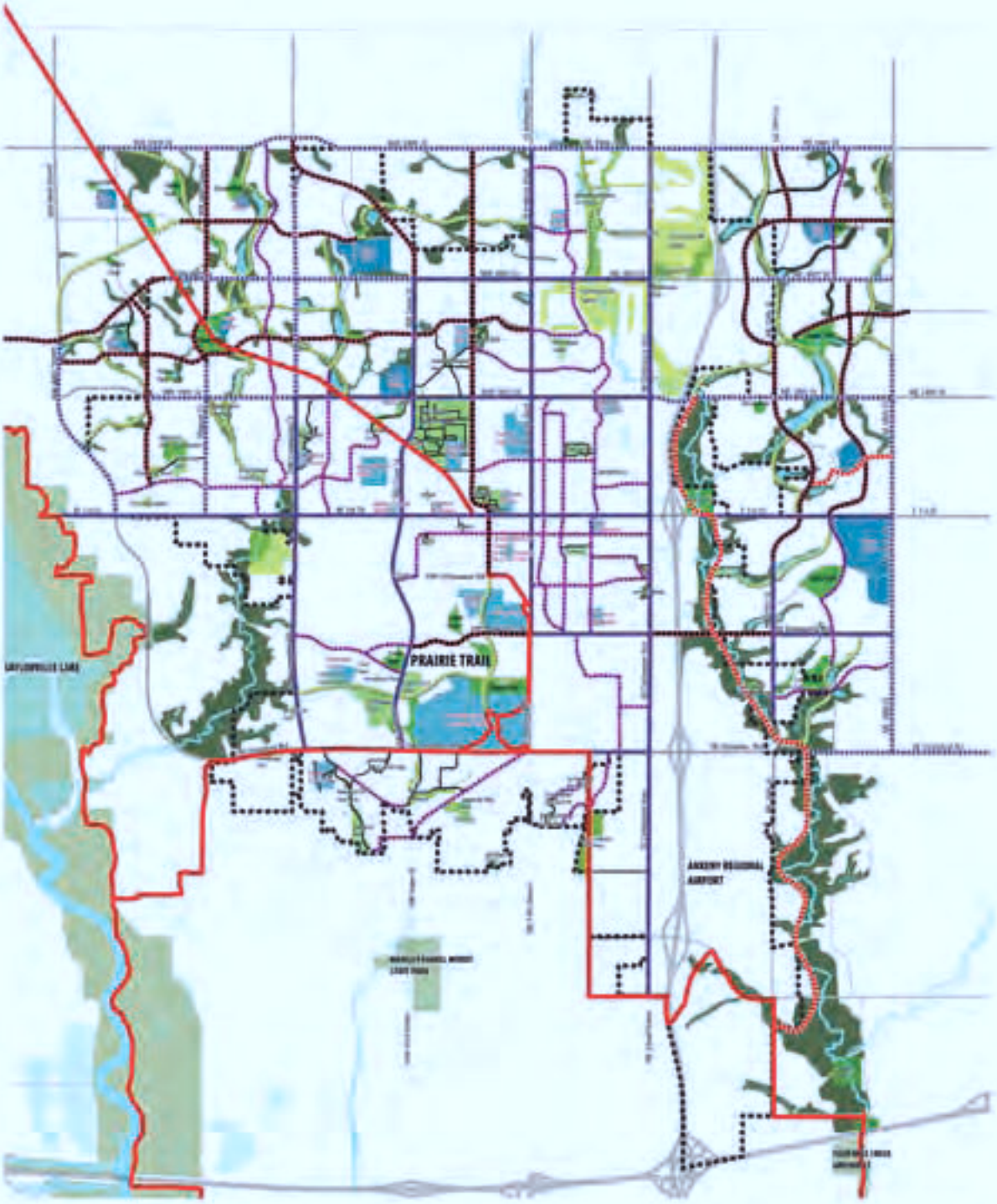
Ankeny, Iowa

Generalized Development Concept

0 1500' 3000' 6000' NORTH

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- VERY HIGH DENSITY RESIDENTIAL
- COMMERCIAL
- MIXED USE
- OFFICE/BUSINESS PARKS
- INDUSTRIAL
- PARKS
- SCHOOLS
- CIVIC
- BLUEBELTS
- AGRICULTURE/OPEN SPACE
- POTENTIAL MANAGEMENT AREAS
- TRANSPORTATION/ROW/GOVERNMENT
- PUBLIC FACILITIES
- ANKENY CURRENT CITY LIMITS
- WETLANDS/PONDS/LAKES
- INTERSTATE
- EXISTING ARTERIALS
- PROPOSED ARTERIALS
- EXISTING COLLECTORS
- PROPOSED COLLECTORS
- LOCAL STREETS


Ankeny, Iowa
Future Land Use
0 1500 3000 6000
AGRICULTURE/OPEN SPACE
LOW DENSITY RESIDENTIAL
MEDIUM DENSITY RESIDENTIAL
HIGH DENSITY RESIDENTIAL
VERY HIGH DENSITY RESIDENTIAL
MOBILE HOMES
MIXED USE 1: NEIGHBORHOOD COMMERCIAL
MIXED USE 2: COMMUNITY COMMERCIAL
MIXED USE 3: REGIONAL COMMERCIAL
MIXED USE 4: OFFICE/INDUSTRIAL MIXED USE
COMMERCIAL CORRIDOR
OFFICE/BUSINESS PARKS
UPTOWN MIXED USE
INDUSTRIAL
PARKS
SCHOOLS
CIVIC
PUBLIC FACILITIES/UTILITIES
BLUEBELTS/GREENWAYS
MANAGEMENT AREAS
GOVT/TRANSPORTATION/ROW
CONSERVATION AREAS
ANKENY CITY LIMITS
WETLANDS/PONDS/LAKES
INTERSTATE
EXISTING ARTERIALS
PROPOSED ARTERIALS
EXISTING COLLECTORS
PROPOSED COLLECTORS
LOCAL STREETS



Ankeny, Iowa

Future Parks, Greenways and Trails

0 1,500' 3,000' 6,000'

NORTH

- WETLANDS/PONDS/LAKES
- CONSERVATION AREAS
- 100 YEAR FLOODPLAIN
- ANKENY CURRENT CITY LIMITS
- RIVER/STREAMS
- POTENTIAL REGIONAL MGMT. AREAS
- EXISTING PARKS
- EXISTING GREENWAYS/GREENBELT
- EXISTING GOLF COURSE
- EXISTING SCHOOLS
- BLUEBELTS
- FUTURE PARKS
- FUTURE SCHOOLS
- EXISTING REGIONAL TRAIL
- PROPOSED REGIONAL TRAIL
- EXISTING LOCAL TRAIL
- PROPOSED COMPLETE STREET
- PROPOSED BICYCLE BOULEVARD
- PROPOSED SPINE TRAIL
- EXISTING SIDEPATH
- PROPOSED SIDEPATH

APPENDIX

APPENDIX

This appendix is a supplement to Chapter 4 Environmental and Stormwater Considerations. It is intended to provide more detailed information related to the natural features and watershed analysis that ultimately produced Figures 4.10 Reserved Open Space Map and 4.11 Stream Classification Map guiding the designation of Bluebelts and the further development of many of the chapters in the 2010 Ankeny Comprehensive Plan. A watershed and sub-watershed based review was completed that included screening a variety of data sets that were publicly available. The resultant rendering of the data into graphics and mapping used in the analysis follow this Appendix cover page; the graphics in Chapter 4 were cropped to depict that portion of the analysis for the "future growth area". The sources of the data are listed below.

RESOURCES

Original Land Survey Information From:

Original Land Survey Records, Polk County, Iowa. (1847)

Aerial Photographs, USGS Maps, 1m LIDAR imagery From:

Iowa State University Geographic Information Systems Support & Research Facility. Iowa Geographic Map Server. Information retrieved December 2009 from http://ortho.gis.iastate.edu/tools.html

Soil Conditions, CSR Map GIS Data From:

Polk County GIS Systems (2008 update), adapted from 2000 Polk County Soil Survey

Wooded Areas, Historic Drainage Patterns, Potholes and Streams Interpreted by:

Nilles Associates from included information resources.

Identified Wetlands Data From:

Polk County GIS Systems (2008 update), adapted from NWI Wetlands Map Data

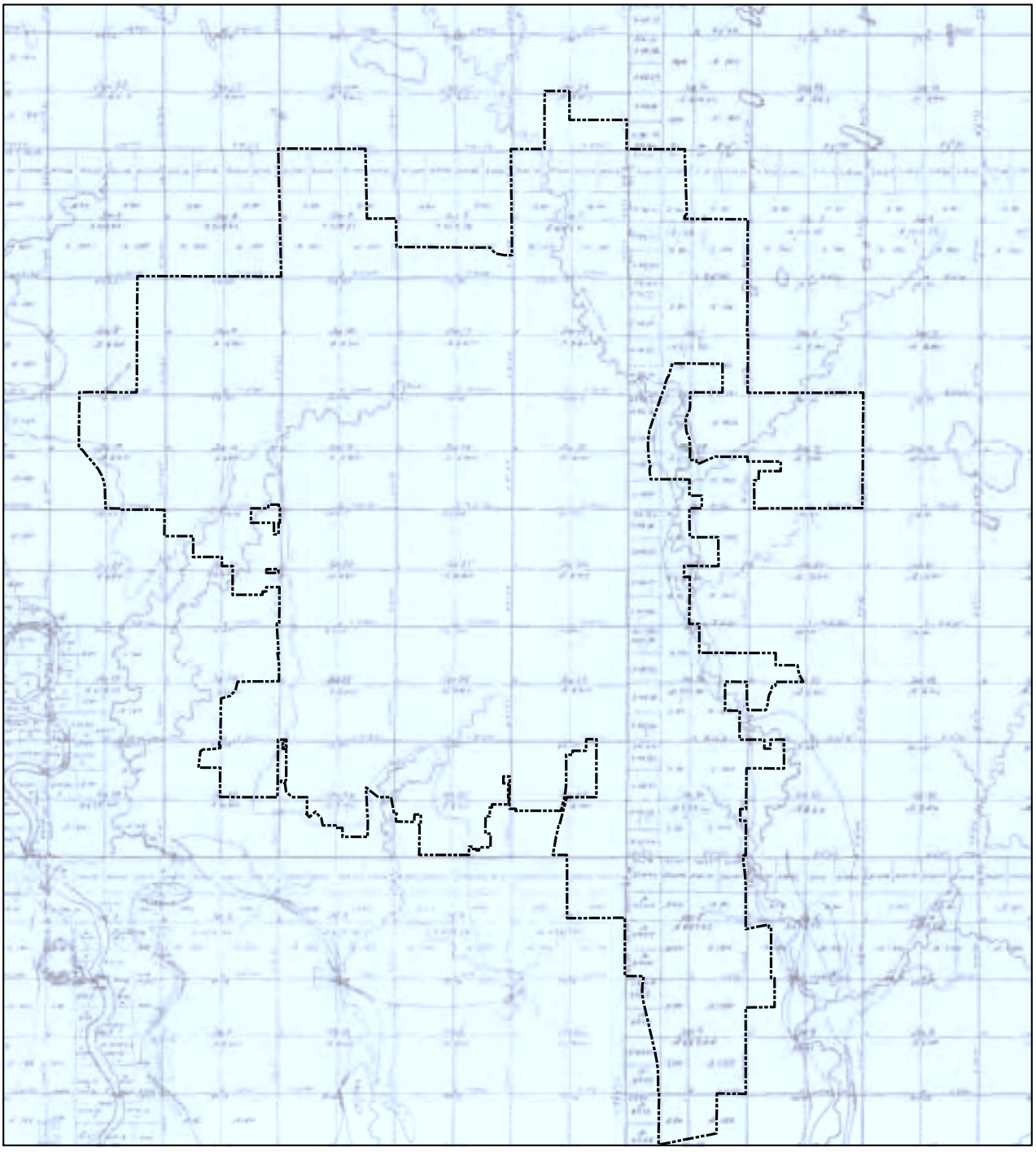
FEMA Flood Map Data From:

City of Ankeny GIS Systems (2009 update), adapted from FEMA FIRM Maps

LIDAR Contour Data developed by Nilles Associates using data from:

University of Northern Iowa. Iowa LIDAR Mapping Project. Information retrieved December 2009 from http://geotree2.geog.uni.edu/lidar/

Bluebelt Areas established by City of Ankeny staff with consultation by Nilles Associates, by reviewing and evaluating included information resources.

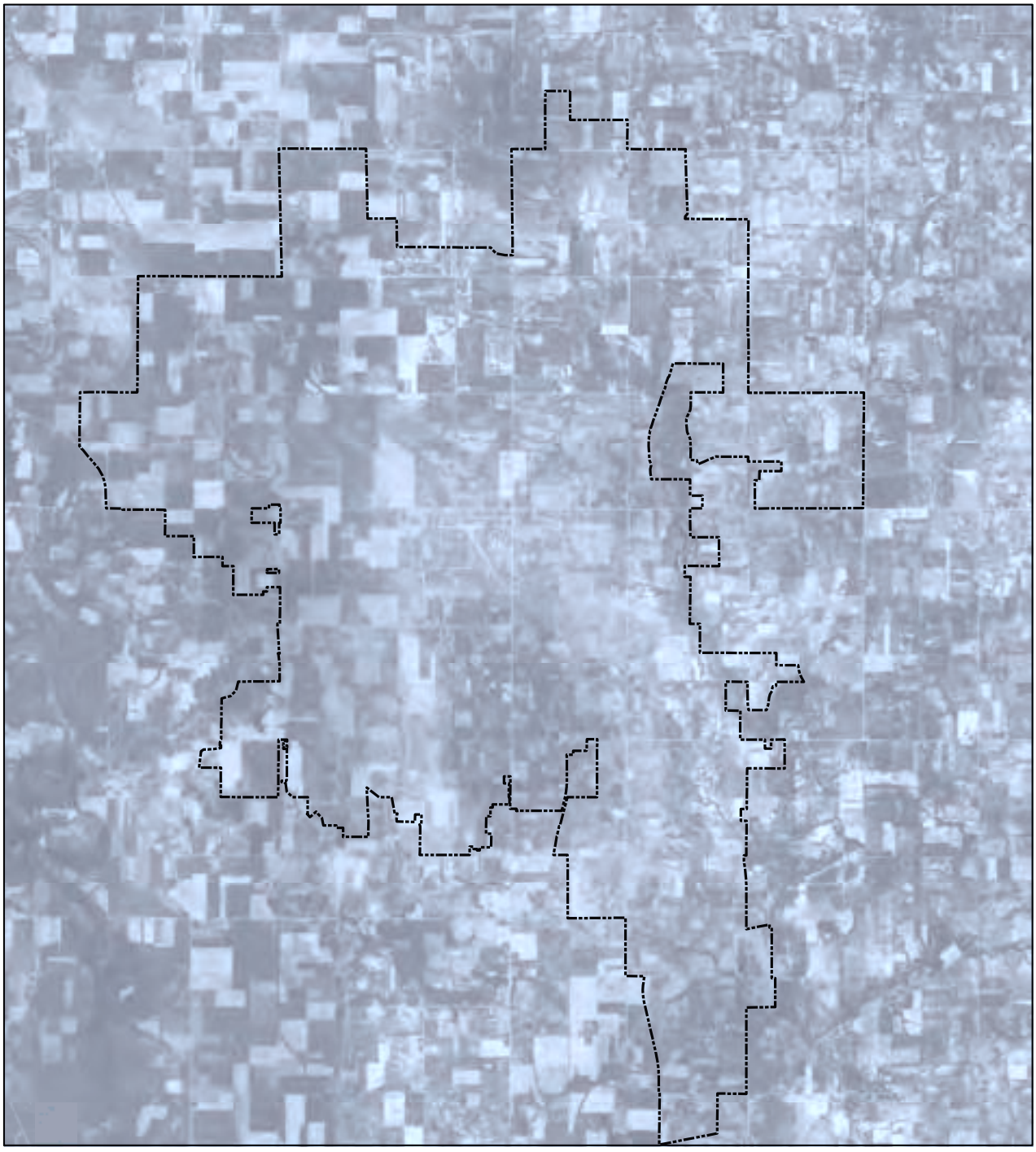


Legend

NORTH

0 3,000 6,000 12,000 Feet

General Land Office Survey (1800s)



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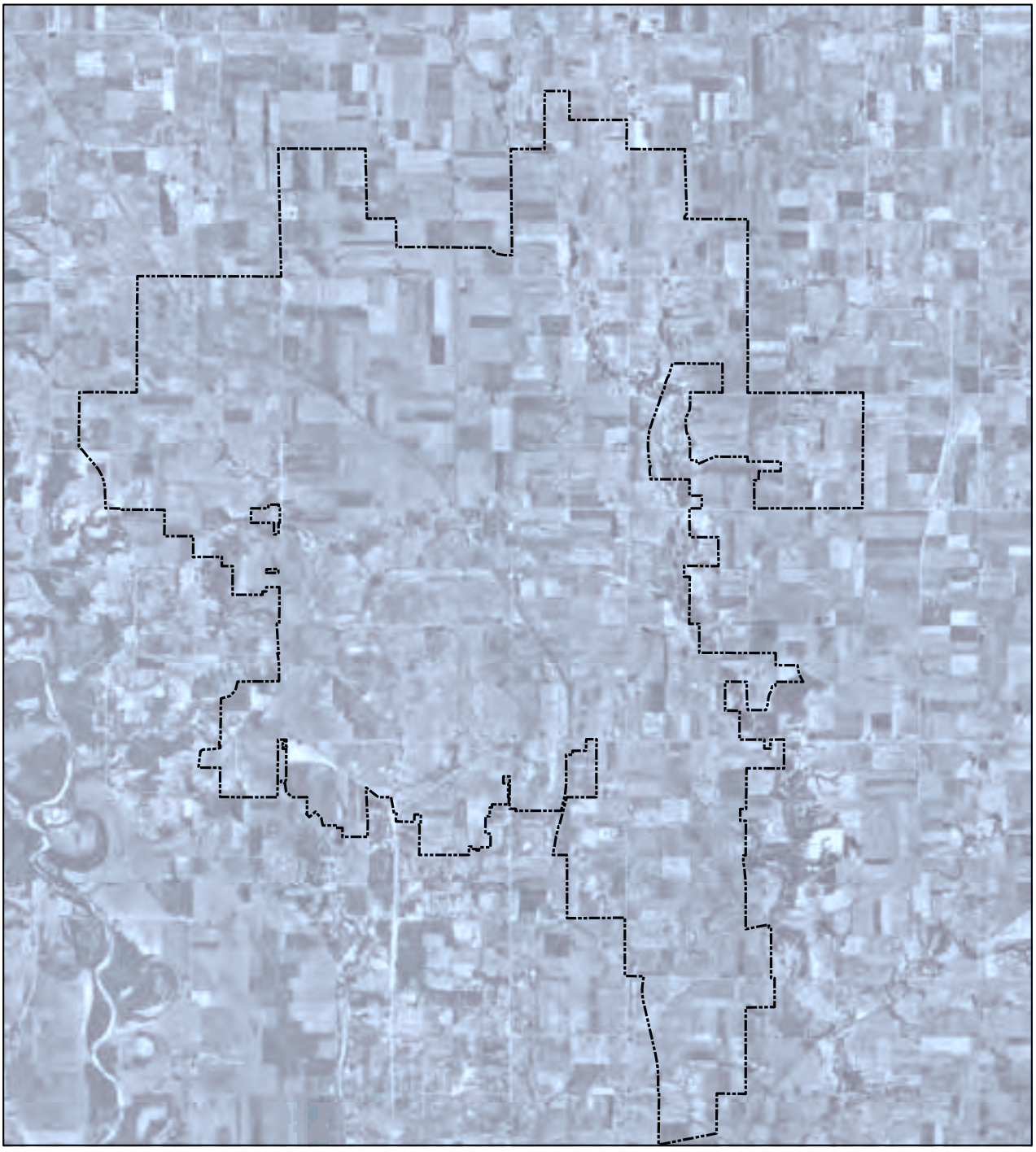
NORTH

0 3,000 6,000 12,000 Feet

1930s Aerial

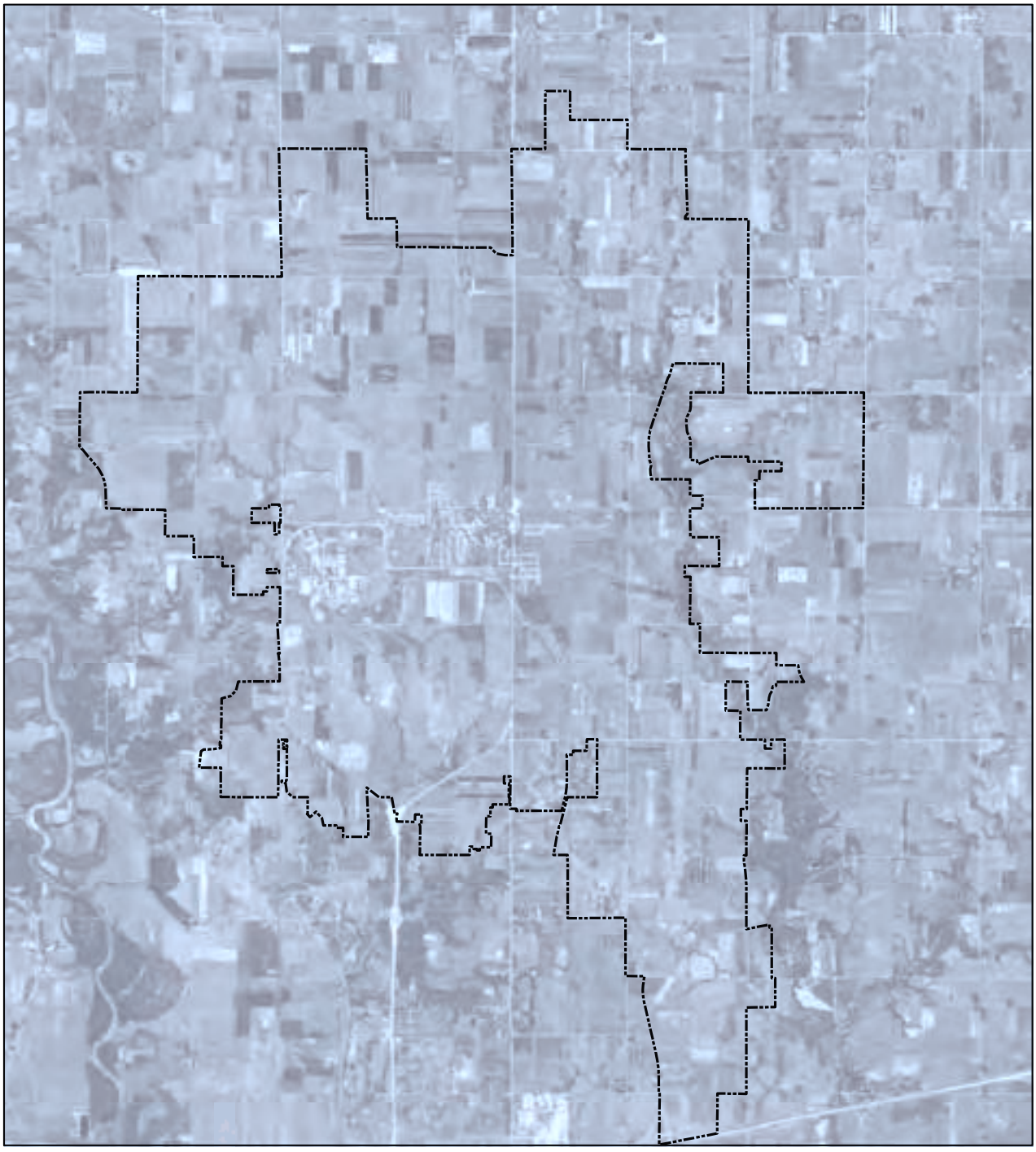


Legend

NORTH

0 3,000 6,000 12,000
Feet

1950s Aerial

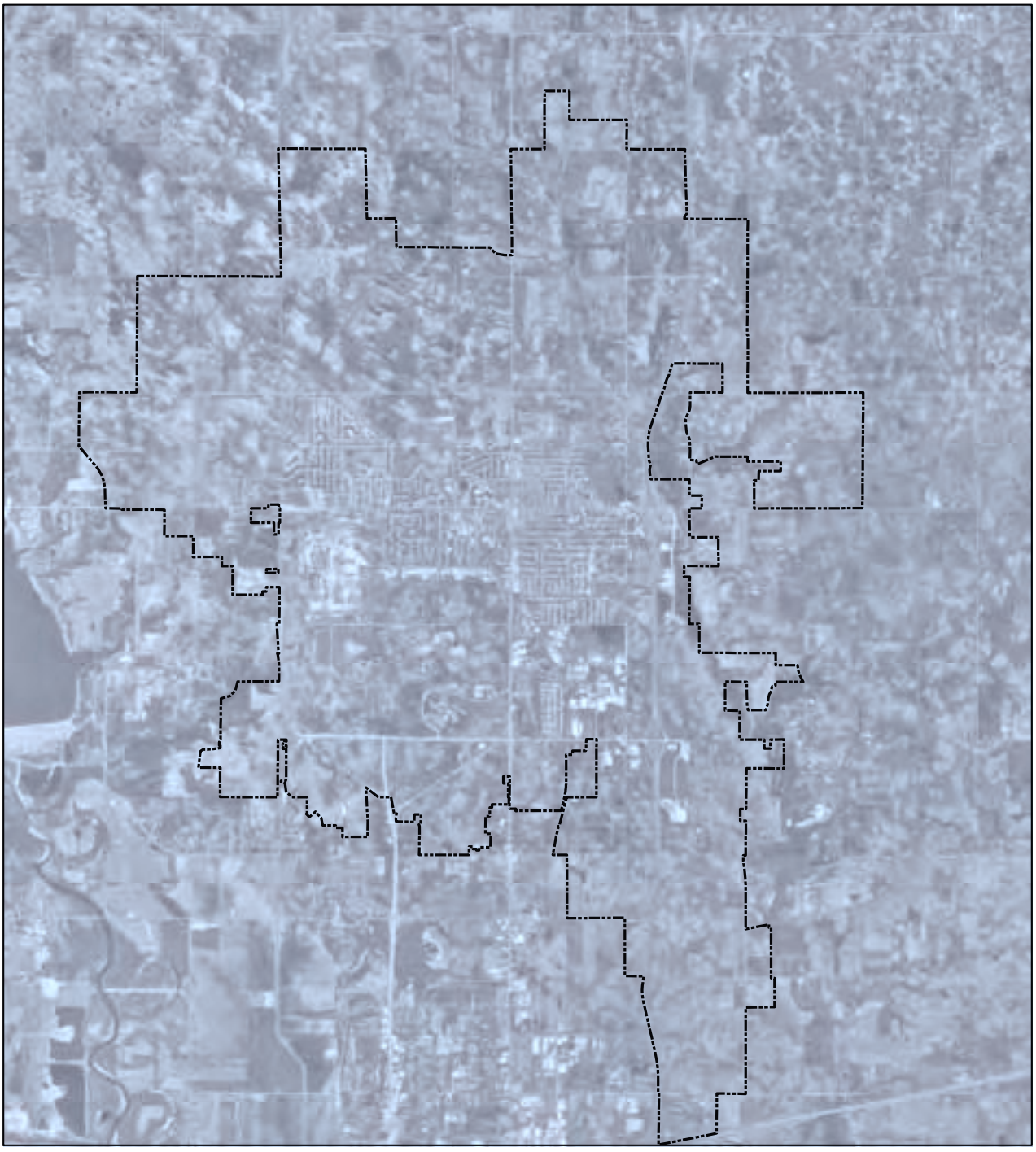


Legend

NORTH

0 3,000 6,000 12,000 Feet

1960s Aerial

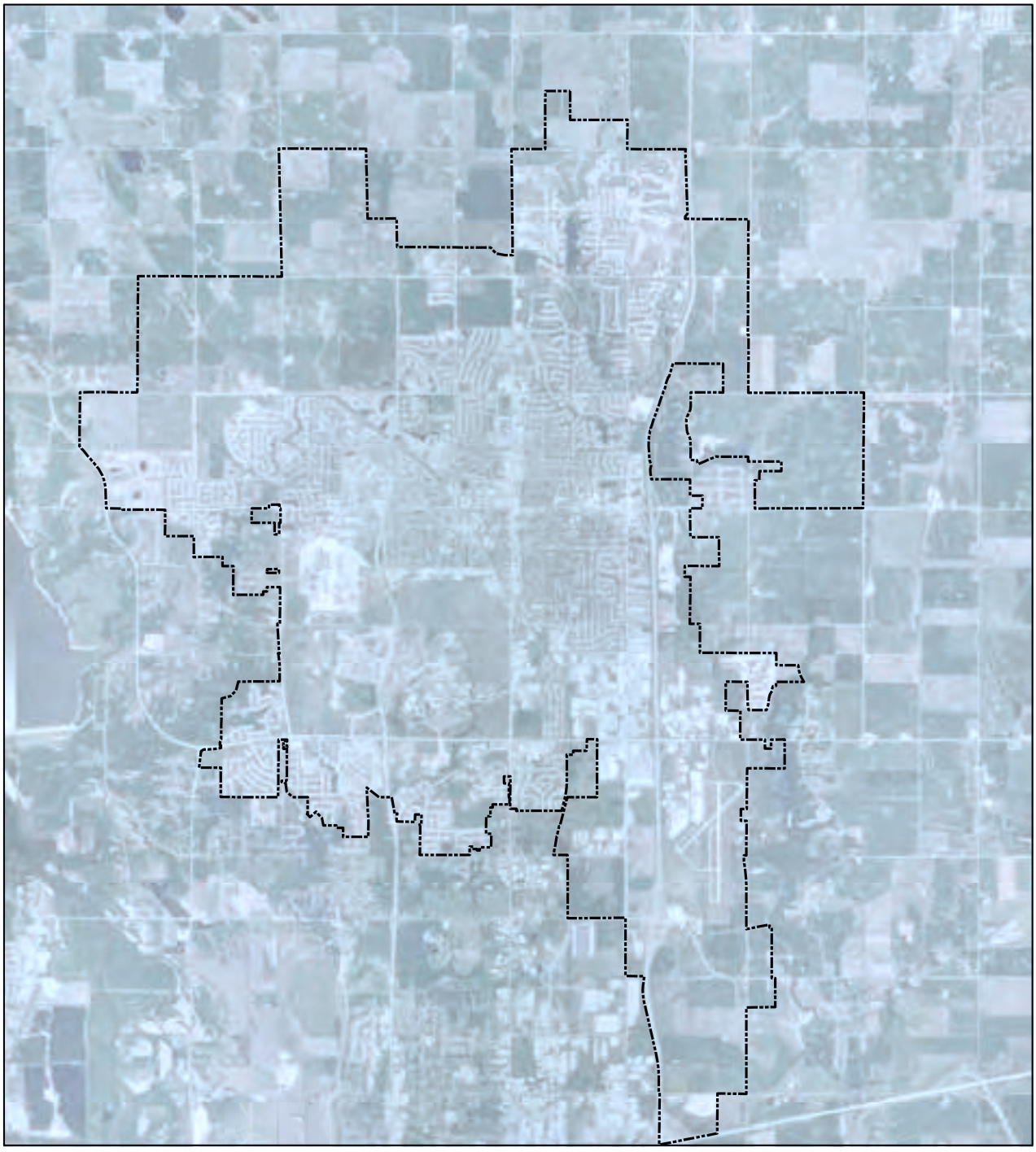


Legend

NORTH

0 3,000 6,000 12,000
Feet

1990s Aerial

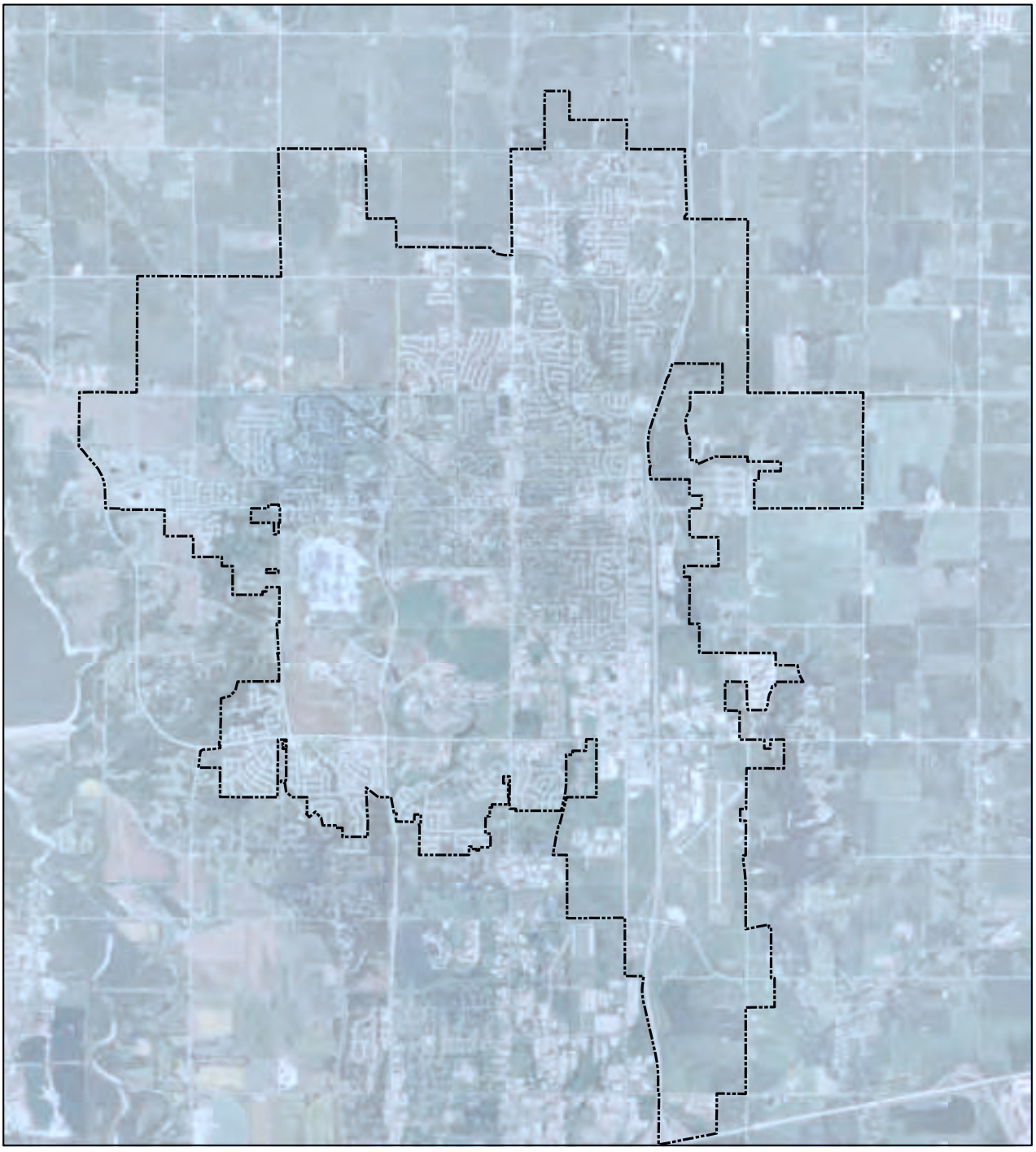


Legend

NORTH

0 3,000 6,000 12,000 Feet

2008 Aerial Photo

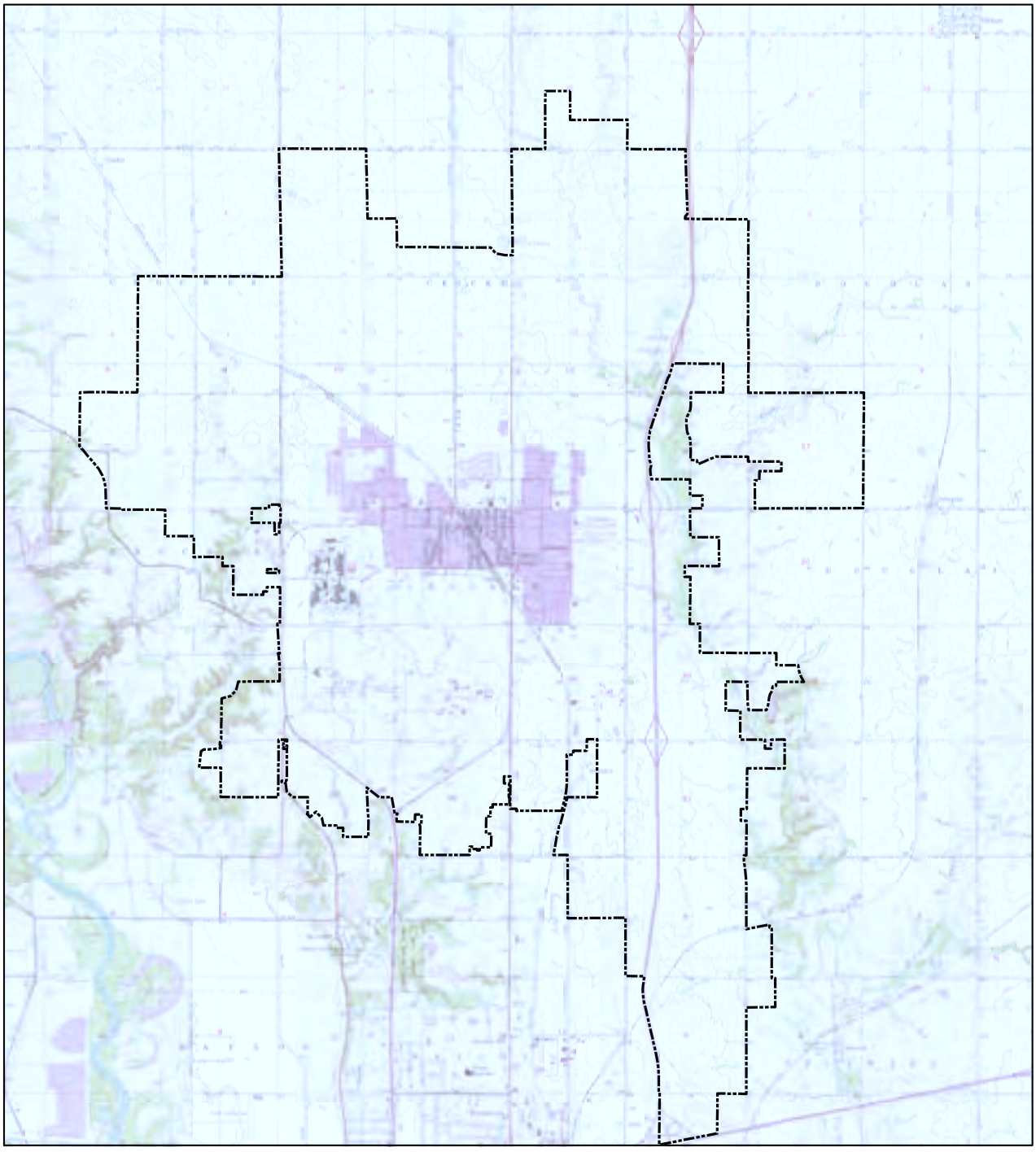


Legend

NORTH

0 3,000 6,000 12,000 Feet

2009 Aerial

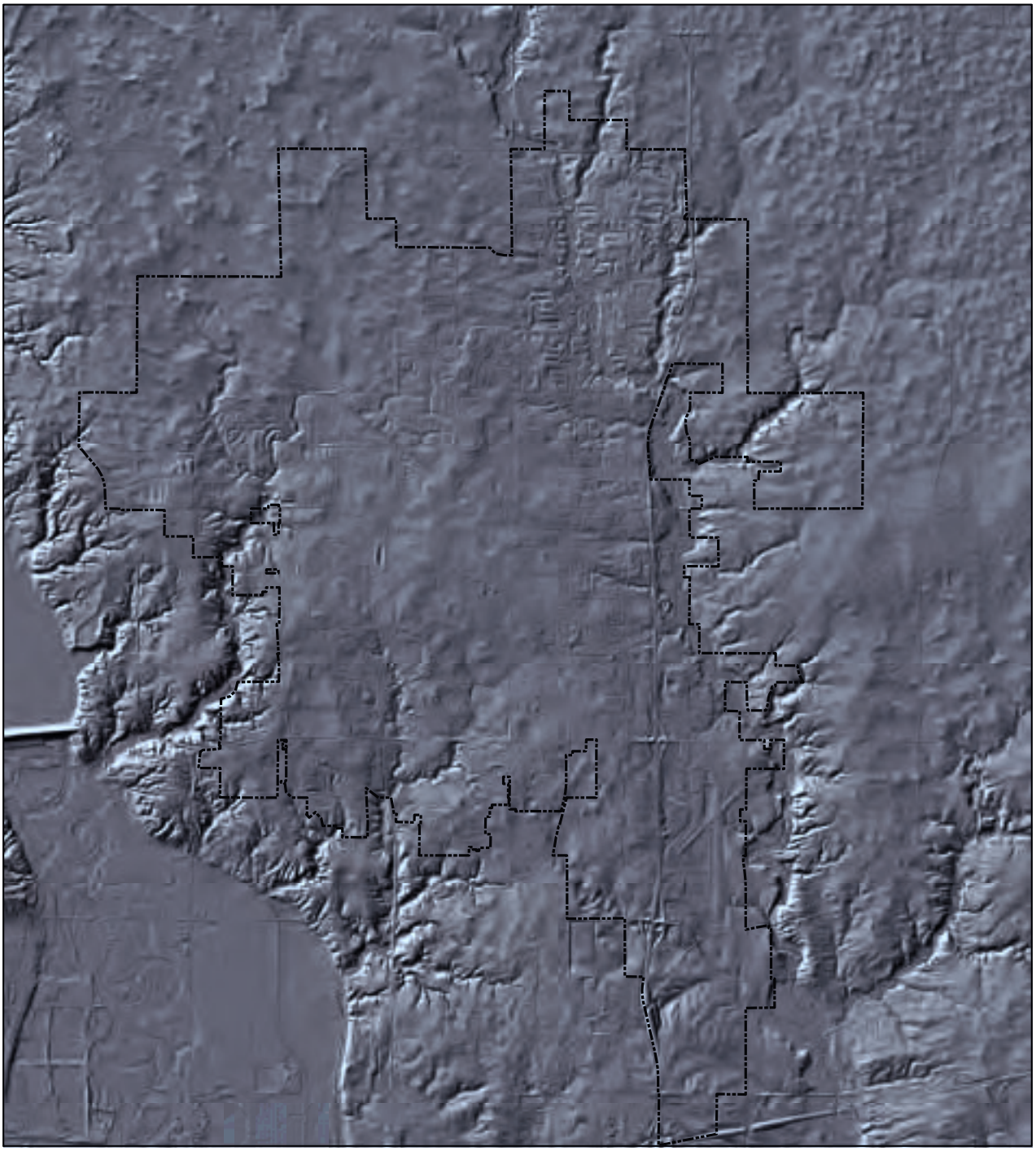


Legend

NORTH

0 3,000 6,000 12,000 Feet

USGS Topographic Map (1950-1970s)

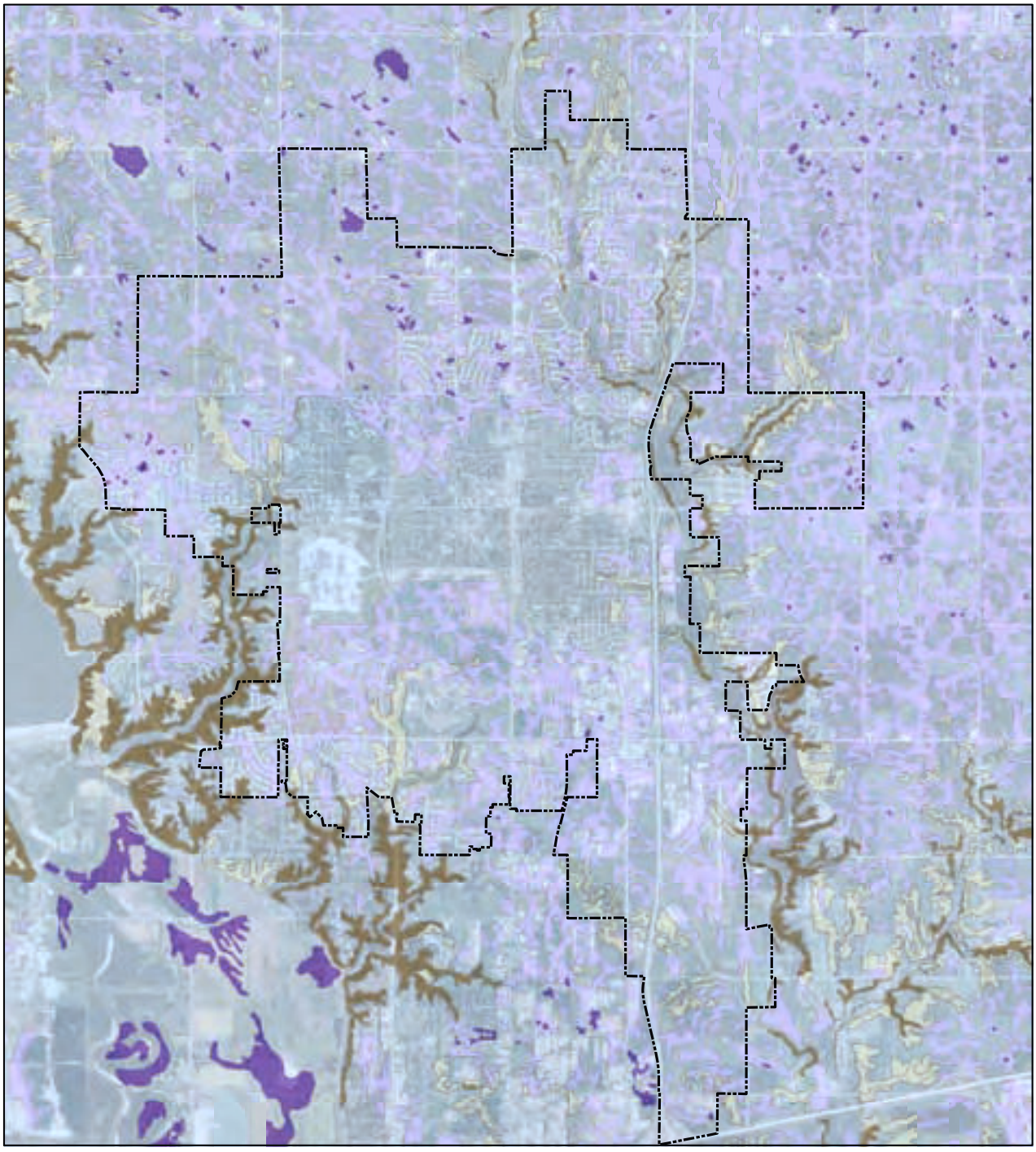


Legend

NORTH

0 3,000 6,000 12,000 Feet

LIDAR Topography



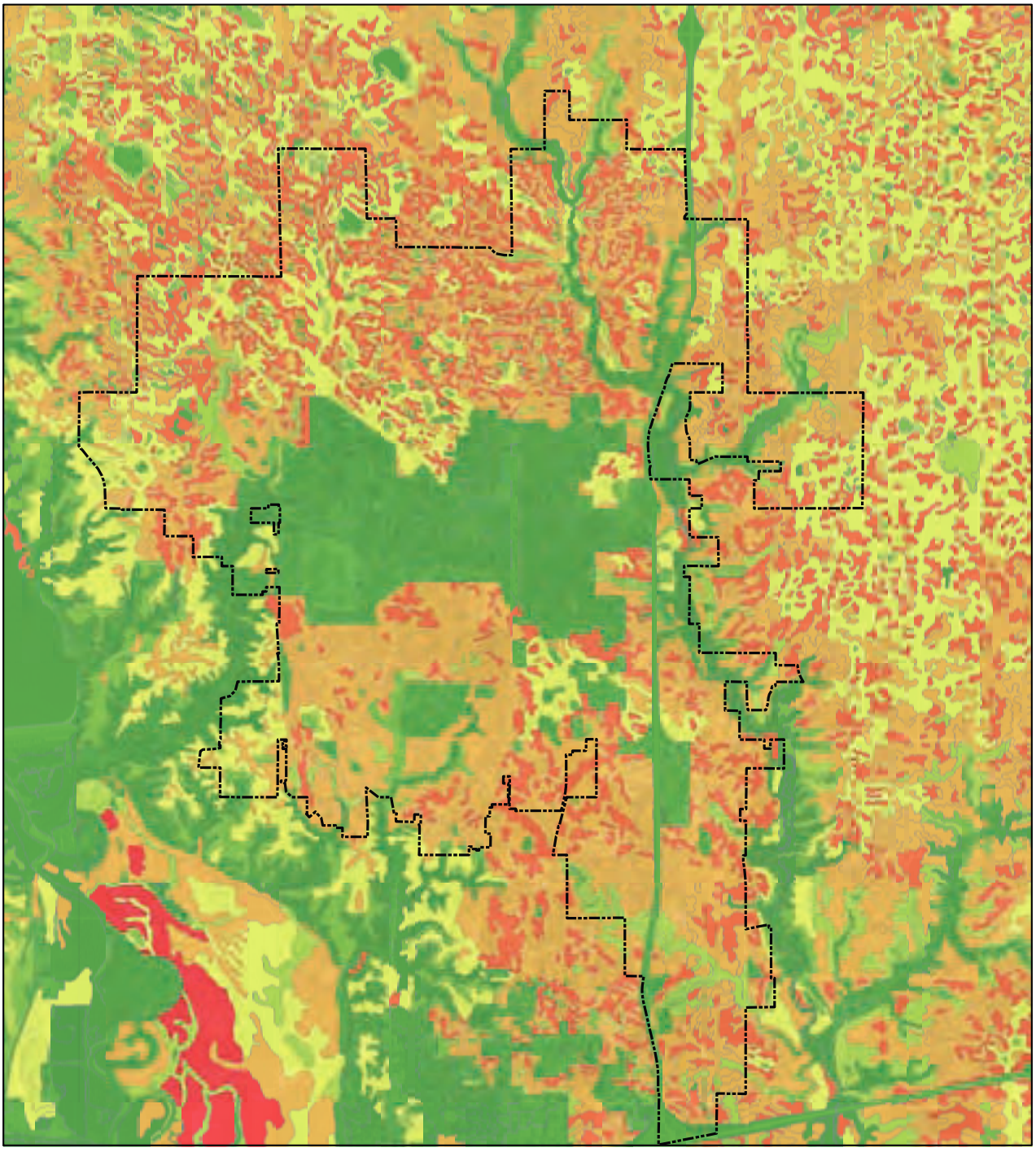
Legend

- Fully Hydric Depressional
- Partially Hydric, Erosive
- Fully Hydric
- Steep Slopes (Greater than 14%)
- Erosive, Moderate Slopes

NORTH

0 3,000 6,000 12,000 Feet

Soil Conditions



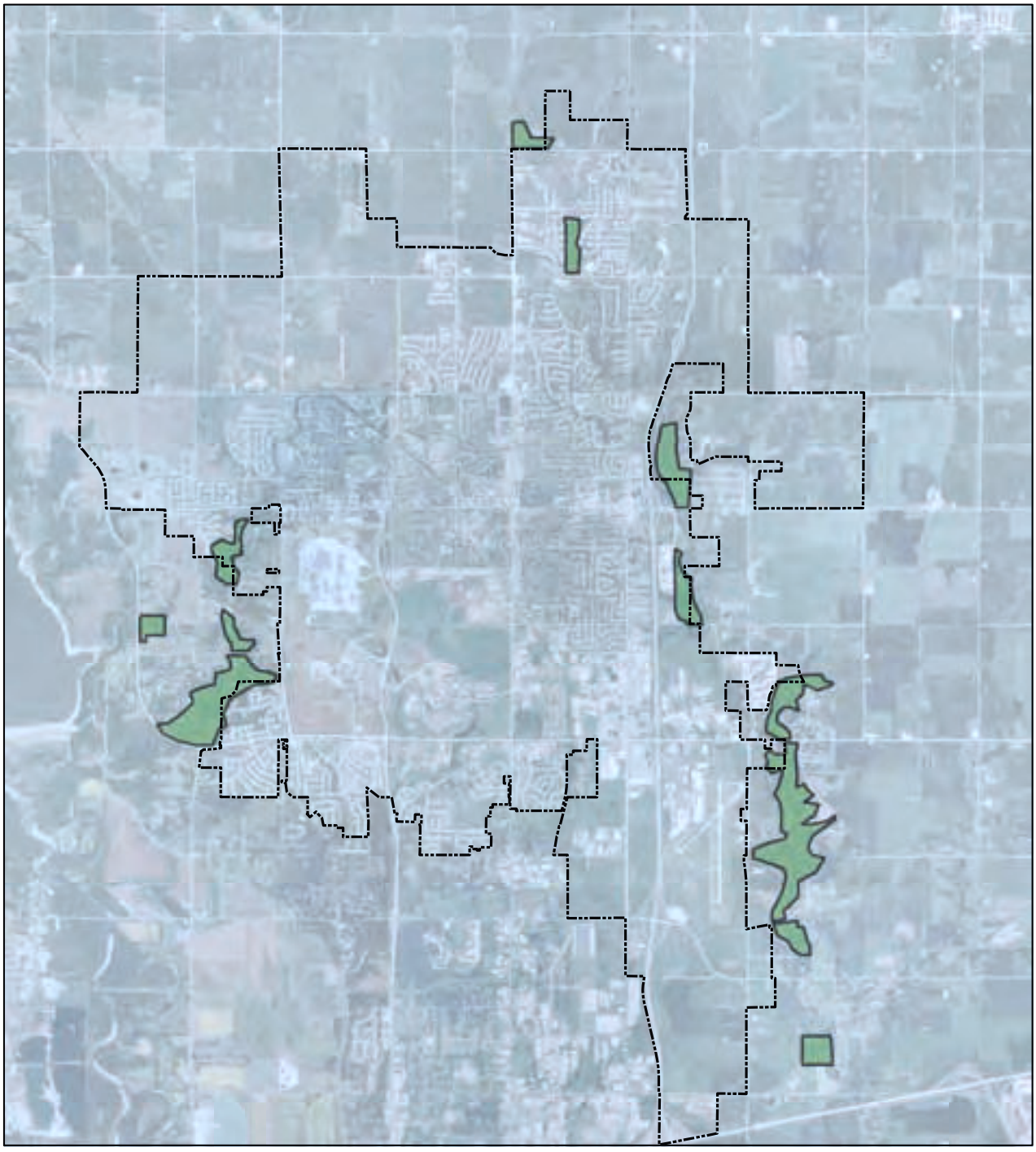
Legend

0-55	85-90
56-64	91-94
65-74	95-100
75-84	

NORTH

0 3,000 6,000 12,000 Feet

Crop Suitability Rating (CSR) Values



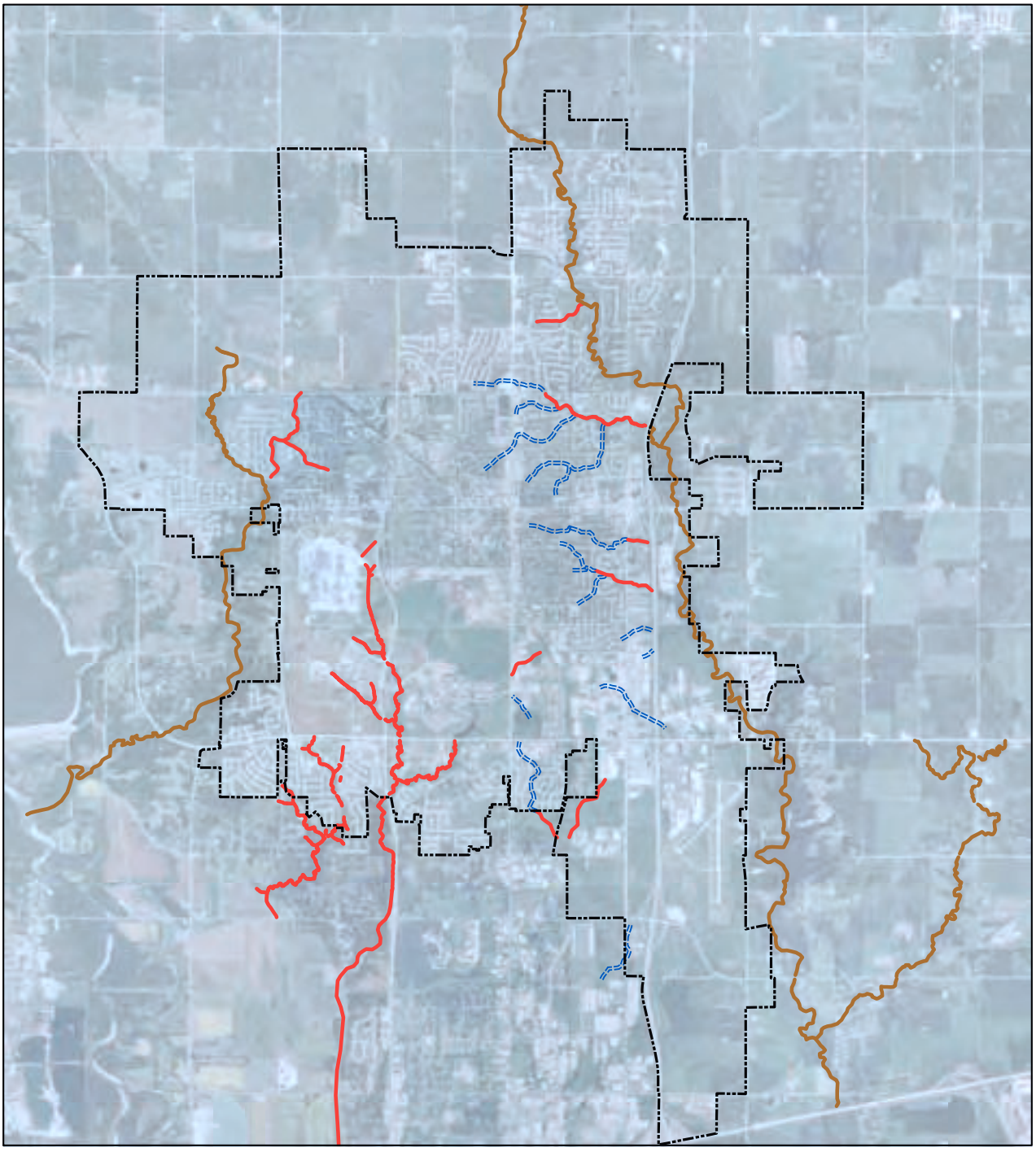
Legend

Quality Wooded Areas

NORTH

0 3,000 6,000 12,000 Feet

Quality Wooded Areas



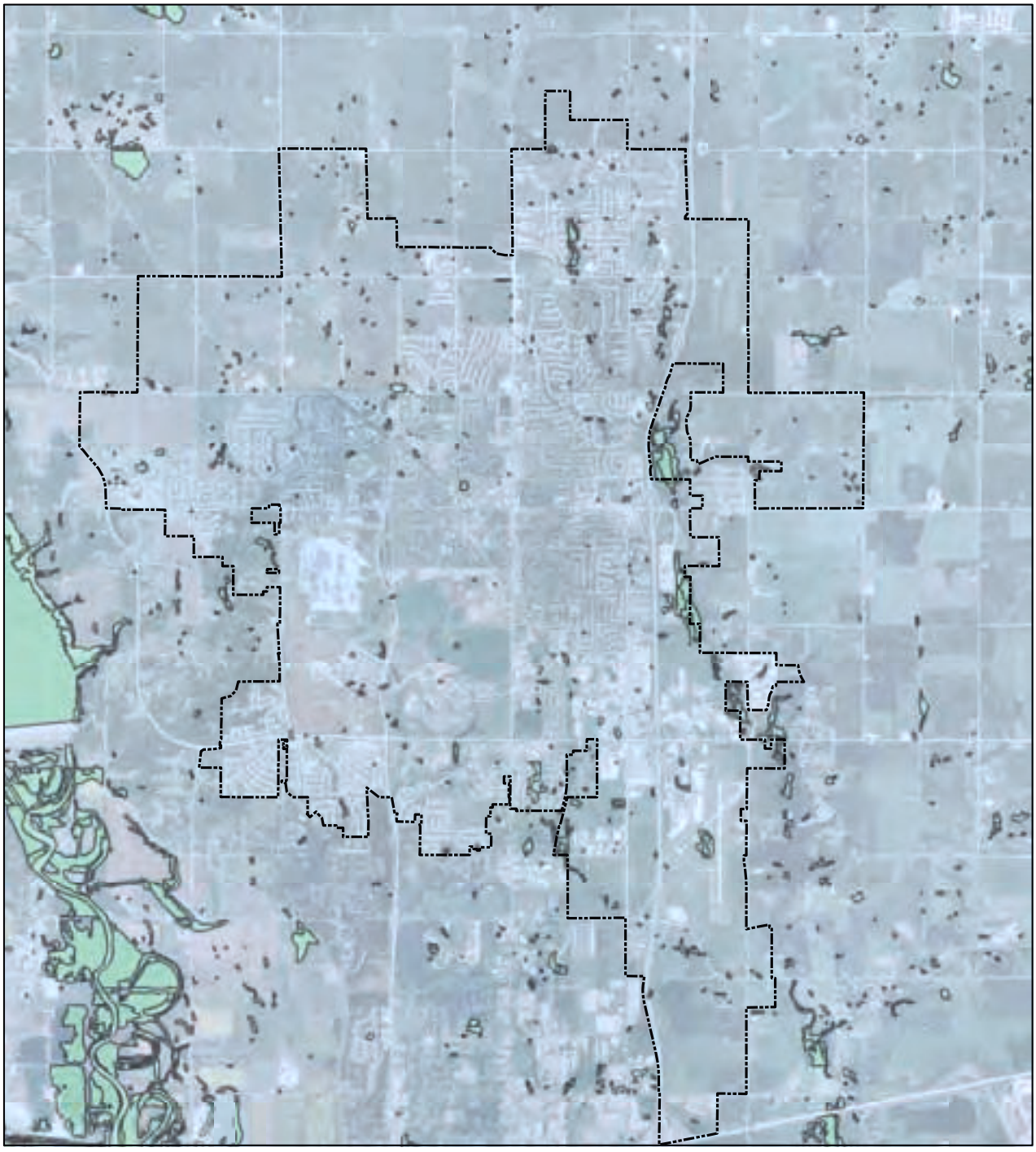
Legend

- Widening of Larger Stream
- Minor Stream More Defined or Eroded
- Stream to Urban Storm Sewer

NORTH

0 3,000 6,000 12,000 Feet

Historic Drainage Patterns



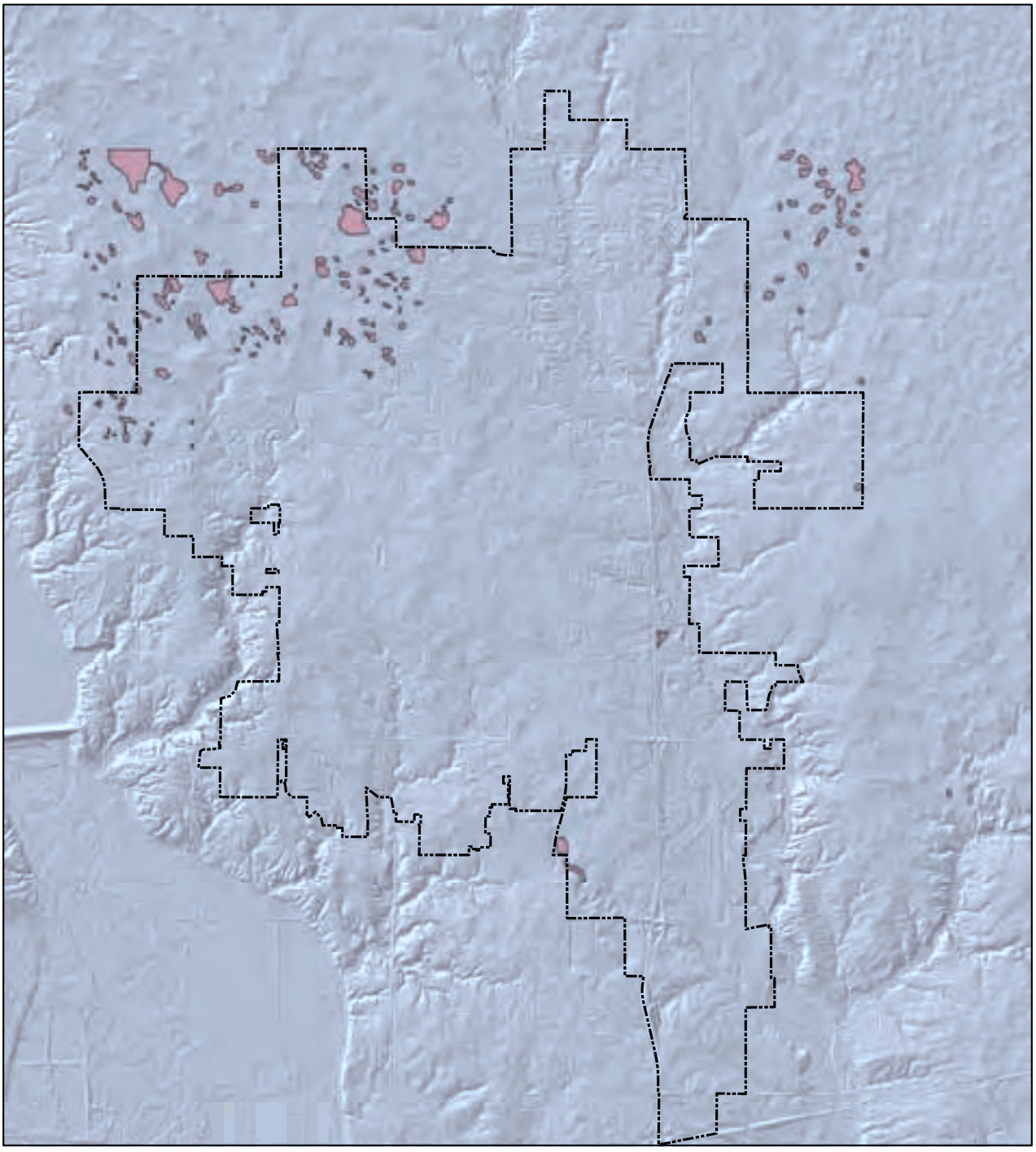
Legend

Wetlands (as per National Wetlands Inventory)

NORTH

0 3,000 6,000 12,000 Feet

Identified Wetlands



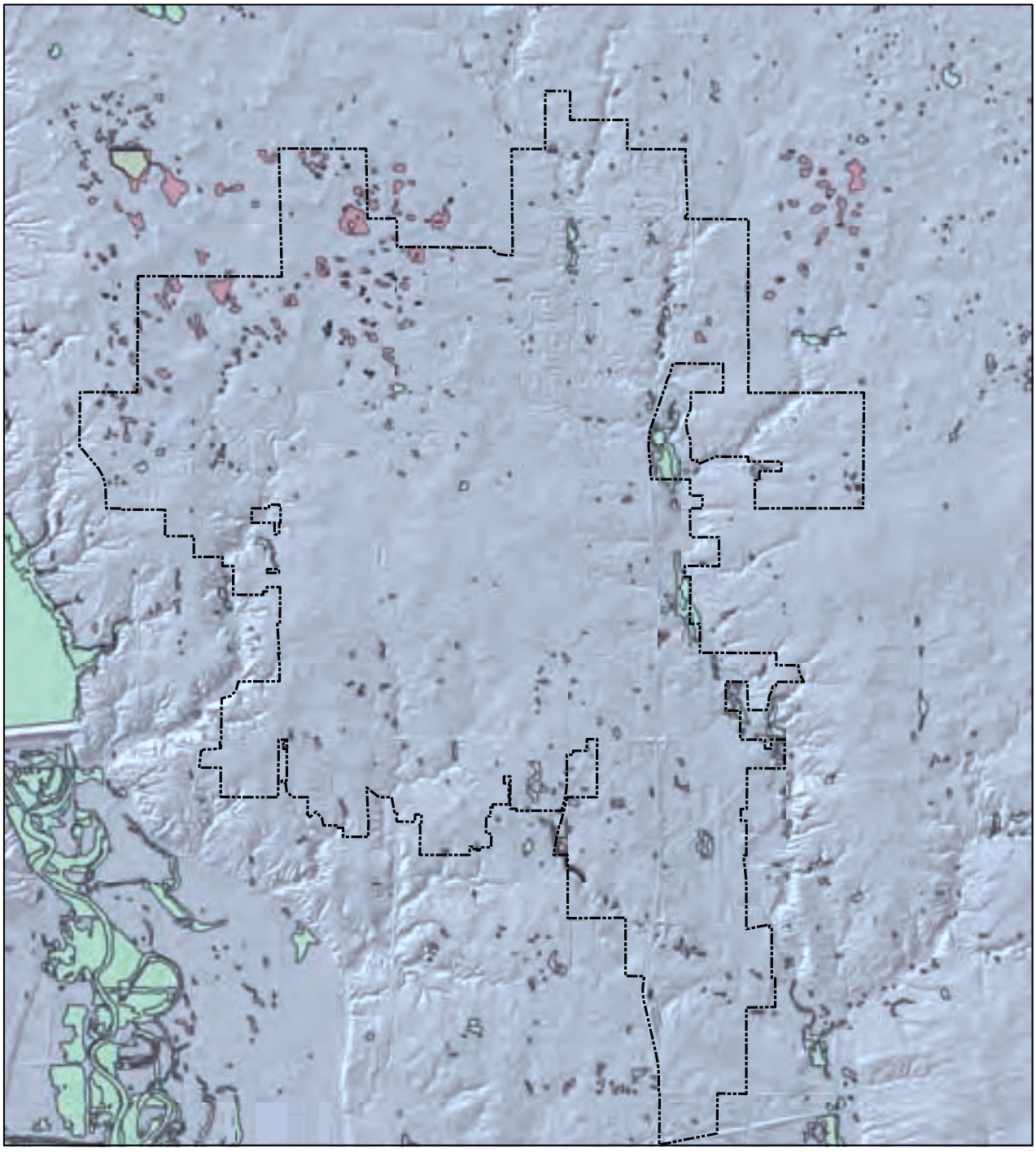
Legend

Significant Depressions (Historic Potholes)

NORTH

0 3,000 6,000 12,000 Feet

Historic Potholes (from Topography)



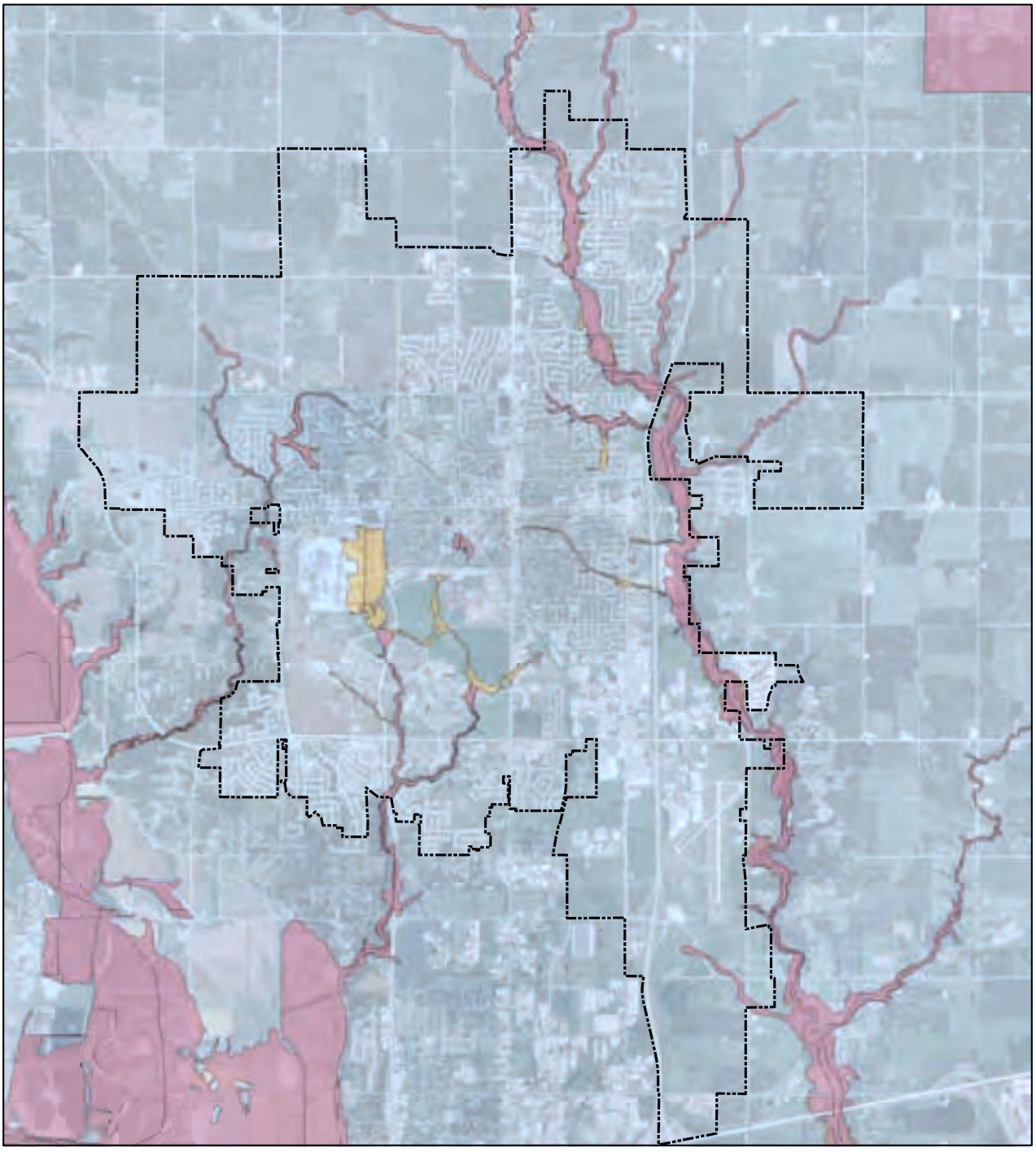
Legend

- Wetlands (as per National Wetlands Inventory)
- Significant Depressions (Historic Potholes)

NORTH

0 3,000 6,000 12,000 Feet

Historic Potholes and NWI Wetlands



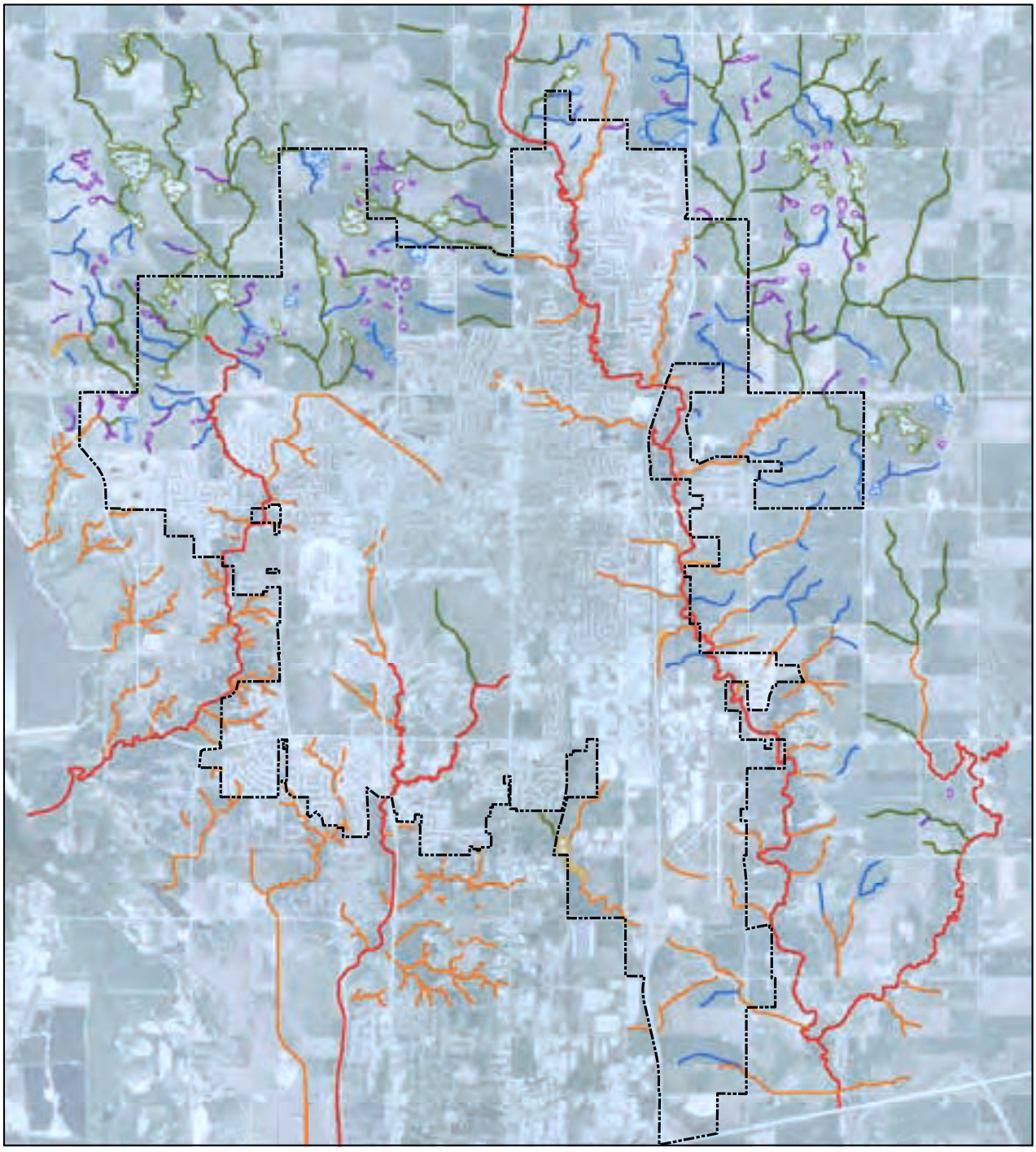
Legend

- Mapped FEMA 100-yr Flood
- Mapped FEMA 500-yr Flood

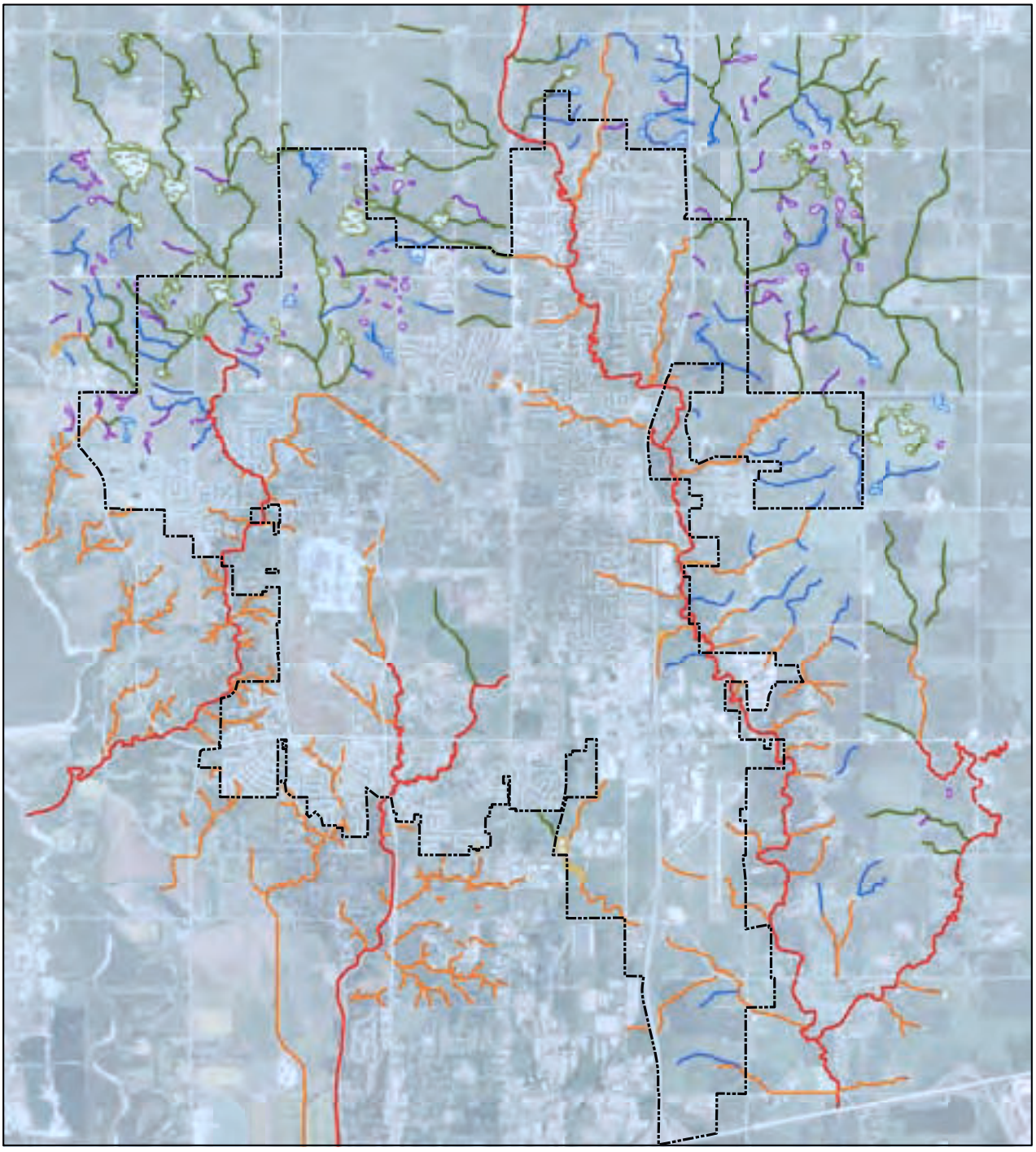
NORTH

0 3,000 6,000 12,000 Feet

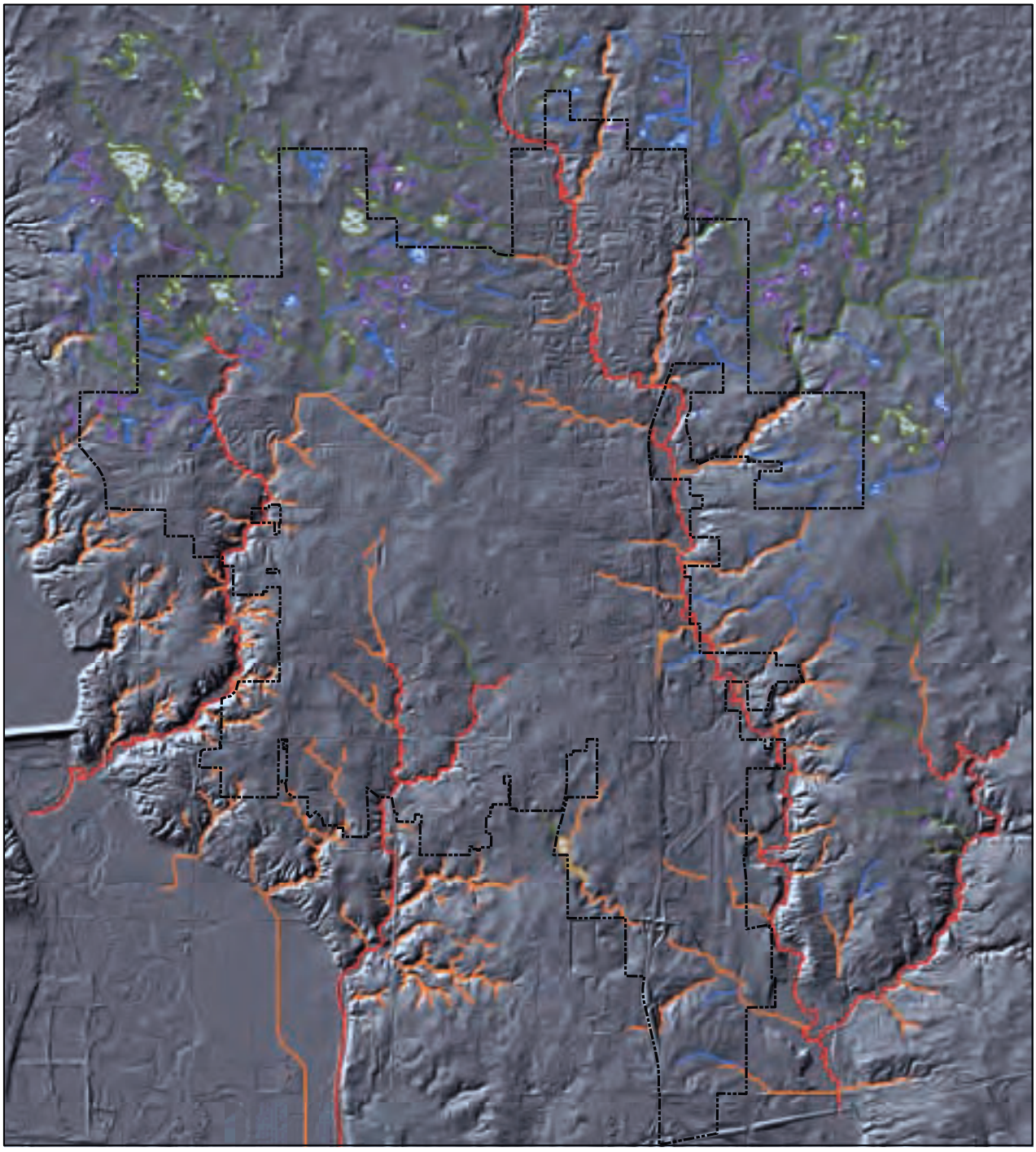
FEMA FIRM Mapped Floodplains



Stream Category and 2008 Aerial



Stream Category and 2009 Aerial Photo



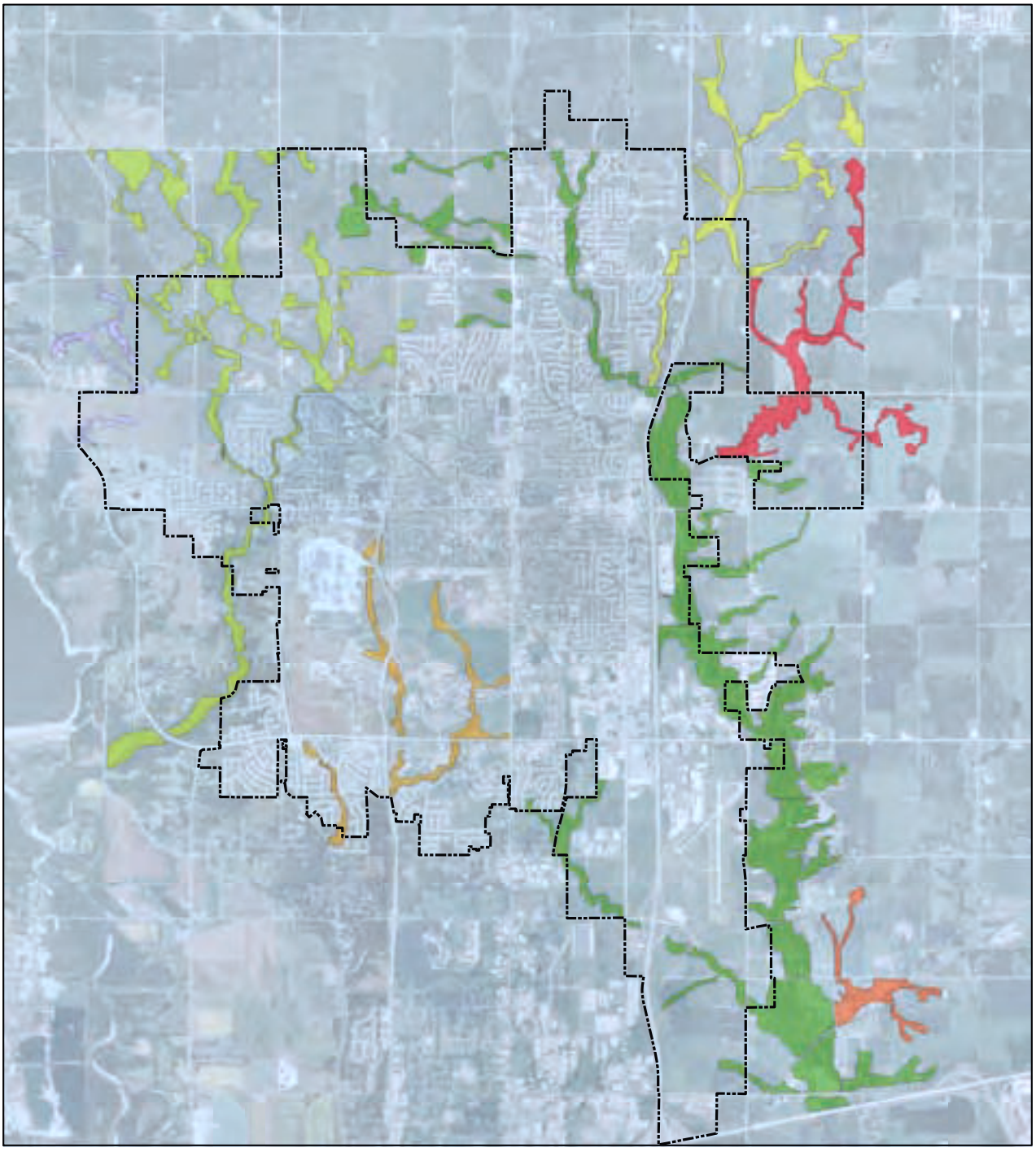
Legend

- A
- B
- C
- D
- E

NORTH

0 3,000 6,000 12,000 Feet

Streams, Potholes and Topography



Legend

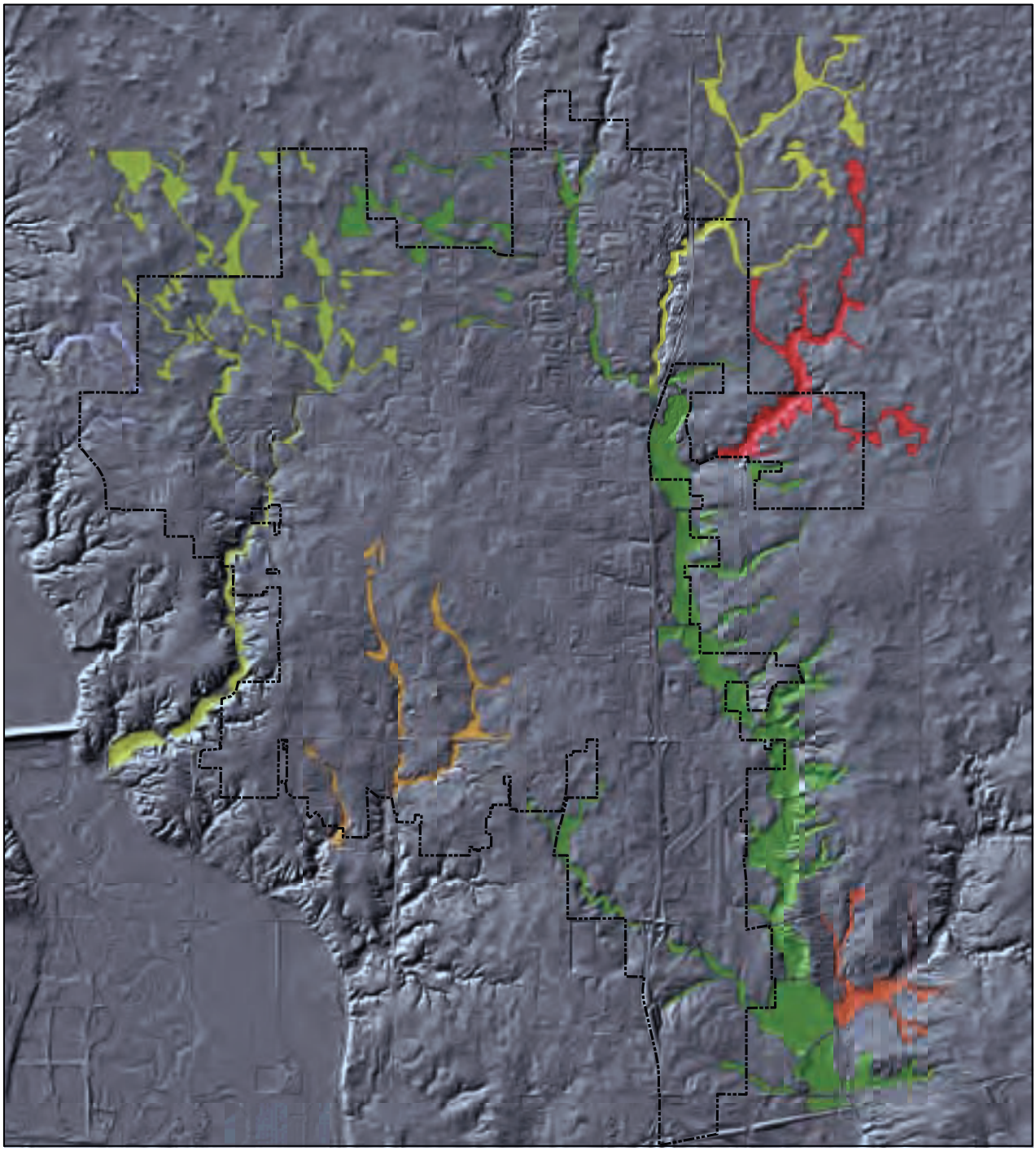
Stream Corridors (Perimeter Areas Included)

- Four Mile
- Saylorville Lake
- Rock Creek
- Otter Creek
- Saylor Creek
- Muchikinoc Creek
- Deer Creek

NORTH

0 3,000 6,000 12,000 Feet

Bluebelts and 2009 Aerial Photo



Legend

Stream Corridors (Perimeter Areas Included)

- Four Mile
- Saylorville Lake
- Rock Creek
- Otter Creek
- Saylor Creek
- Muchikinoc Creek
- Deer Creek

NORTH

0 3,000 6,000 12,000 Feet

Bluebelt Corridors and Topography

Legend

- A
- B
- C
- D
- E

Stream Corridors (Perimeter Areas Included)

- Four Mile
- Saylorville Lake
- Rock Creek
- Otter Creek
- Saylor Creek
- Muchikinoc Creek
- Deer Creek

NORTH

0 3,000 6,000 12,000 Feet

Streams and Bluebelts